## **WASTE MANAGEMENT PLAN**

FOR

## **Alexan – Fashion Valley Project**

San Diego, California Project No. 474586

Prepared for:

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#### 1.0 INTRODUCTION

The purpose of this Waste Management Plan (WMP) for the Alexan – Fashion Valley Project in the City of San Diego is to provide analysis of the solid waste impacts anticipated for the Alexan – Fashion Valley Project and how those impacts will be mitigated. The goal of this WMP is to identify sufficient mitigation to reduce the potential impacts of the Alexan – Fashion Valley Project on solid waste services. Two acceptable approaches to managing waste are to reduce the tons disposed to 60 tons or less, or to provide diversion of 75 percent or more, thus meeting the goal established by Assembly Bill 341.

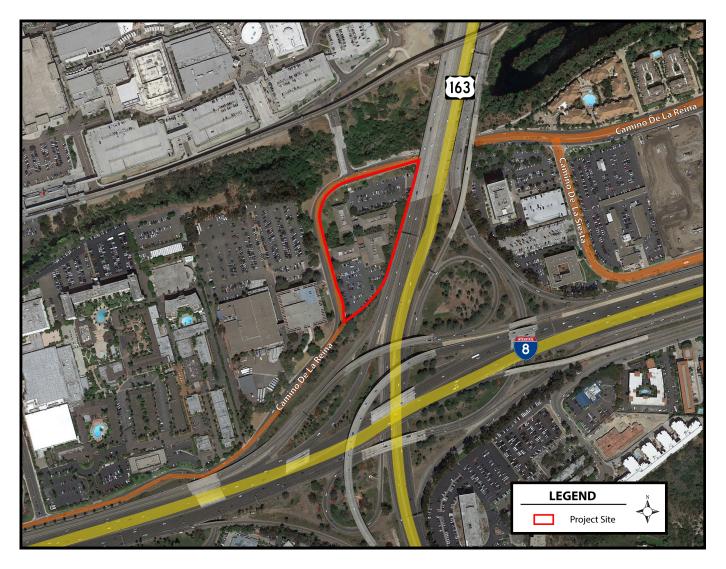
The 4.92-acre Alexan – Fashion Valley Project site is located at 123 Camino de la Reina, San Diego, California 92108. The site is situated south and east of Camino de la Reina, west of SR-163, north of the SR-163/I-8 interchange, and is within the Mission Valley Community Plan area. (See Figure 1, Alexan – Fashion Valley Project Location Map and Aerial.) The project site is developed with multitenant office. The Union-Tribune office building is located north of the project site, with Fashion Valley mall located further north of the project site, beyond the San Diego River. The site is zoned MVPD-MV-CO (Mission Valley – Commercial Office) and is designated Commercial Office in the Mission Valley Community Plan. The project proposes utilizing the "Multiple Use Development Option" allowed in the Community Plan to create a mixed-use project (commercial office/restaurant space and residential units).

The proposed project involves demolition of existing structures (69,651 square feet) and on-site surface parking and construction of a mixed-use development consisting of a multi-family residential, commercial office, and restaurant uses. The project would be four to five stories in height and would have a total of 284 residential units, 5,760 square feet of commercial office use, and 3,137 square feet of restaurant space. A total of 475 parking spaces would be provided in a six-story, above ground parking structure, as well as surface parking lots. (See Figure 2, *Alexan – Fashion Valley Project.*)

The proposed Alexan – Fashion Valley Project involves a Site Development Permit and a Planned Development Permit with action by the Planning Commission (Process Four). The project proposes a mix of residential, commercial office, and restaurant uses and complies with the Mission Valley Planned District Ordinance allows for a Multi-Use Option (LDC 1514.0307.c). The project would develop under the existing zone and land use designation; therefore, a Rezone and Community Plan Amendment would not be required.

This WMP consists of two sections corresponding to the implementation of site development: the *Construction Phase* (to include demolition) and the *Occupancy Phase* (post-construction). The WMP addresses the projected amount of waste that could be generated by the project based on current City generation rates and estimates; waste reduction goals; and recommended techniques to achieve the waste reduction goals, such as recycling. The project includes two months of demolition. Construction of the project (including demolition) will take approximately 12 – 14 months. Construction will take place as a single phase and is estimated to begin mid-2017.

Figure 1
Alexan – Fashion Valley - Project Location Map and Aerial



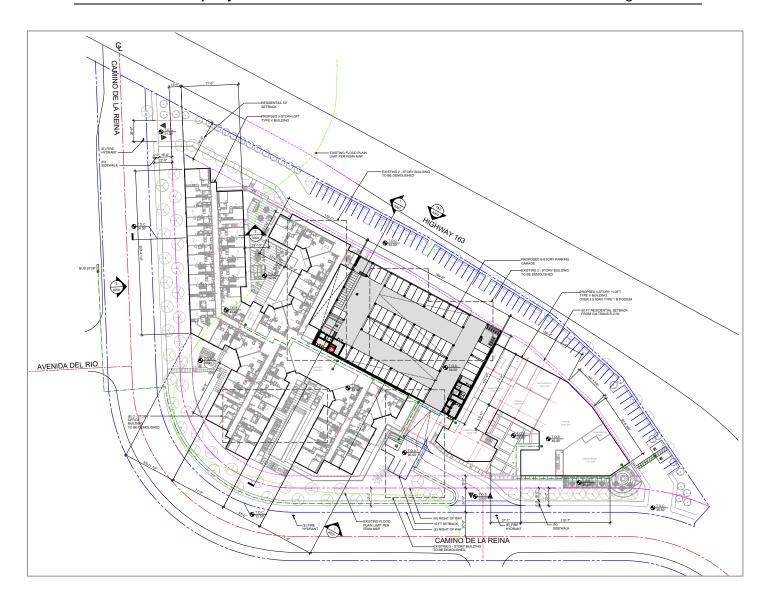


Figure 2
Alexan – Fashion Valley Project Site Plan

Waste disposal sites and recycling methods and opportunities may change from those available today; however, it is not expected that waste diversion and disposal sites listed in Table 4 would change by the time the project is anticipated to begin construction. This WMP includes the following general information known at the time the WMP was prepared:

- Projected waste generation calculations and identification of types of waste materials generated;
- Source separation techniques for waste generated;
- How materials will be re-used on-site;
- Name and location of current recycling, re-use, and landfill facilities where waste will be disposed of if not re-used on-site;
- A "buy recycled" program;
- Measures to be implemented directed at reducing construction debris;
- Method(s) for communicating waste reduction and recycling goals to subcontractors;
- A general time line for construction and development; and
- A list of required progress and inspections by City staff, based on current ordinances.

#### 2.0 BACKGROUND

In 1989, the California Legislature passed Assembly Bill (AB) 939: Integrated Waste Management Act, which mandated that all cities reduce waste disposed in landfills from generators within their borders by 50 percent by the year 2000. AB 939 required all local governments to prepare a Source Reduction and Recycling Element, which incorporates waste management policies and programs to achieve the mandated waste reduction. Since 1990, the City has diverted more than 50 percent of its generated waste stream from disposal. This bill specified that solid waste should be considered by the equation GENERATED = DISPOSED + DIVERTED. "Diverted" materials are put into a hierarchy in the law, as follows:

- First *source reduction*, such as using a reusable bag, making double-sided copies, or other measure that stops waste at the source.
- Secondary measures include recycling and composting. Because these measures often have transportation and processing impacts, they are considered less preferable than source reduction.
- In the Public Resources Code, various methods of *transformation* for energy production are limited to ten percent of the total waste reduction target.

In 2008, SB 1016 was chaptered. Known as the Solid Waste Disposal Measurement Act, SB 1016 maintained the 50 percent diversion requirement, but changed to a disposal-based measurement system, expressed as the 50 percent Equivalent Per Capita Disposal Target. This built upon AB 939 by implementing a simplified and timelier indicator of jurisdiction performance that focuses on reported disposal at Board-permitted disposal facilities. This established a goal of not recycling more, but disposing of less. AB 341: Jobs and Recycling, chaptered in 2011, was intended to create green jobs by expanding recycling to every multi-family dwelling and business. It charged CalRecycle with responsibility for ensuring that the State is diverting at least 75 percent of solid waste that is generated within the State by 2020. SB 1016 establishes that compliance with State law is measured

by reducing the amount of waste material requiring disposal, and AB 341 increases the diversion target to 75 percent.

Additional local regulation pertaining to solid waste management includes the City of San Diego's Municipal Code Ch.14 Art. 2 Div. 8: §142.0810, §142.0820, Ch. 6 Art. 6 Div. 7; §66.0706, §66.0709, §66.0710; and Ch. 6 Art. 6 Div. 6; §66.0711, §66.0604, §66.0606. These statues designate refuse and recycling space allocation requirements for:

- on-site refuse and recyclable material storage requirements,
- diversion of construction and demolition debris regulations, and
- diversion of recyclable materials generated from residential facilities, businesses, commercial/institutional facilities, apartments, condominiums, and special events requiring a City permit.

The City of San Diego has established a threshold of 40,000 square feet of development as generating sufficient waste (60 tons) to have a potentially cumulatively significant impact on solid waste services. *Alexan – Fashion Valley Project* as proposed exceeds this threshold. The purpose of this WMP is to identify mitigation measures to reduce this potential impact to below a level of significance.

The City Recycling Ordinance is found in Municipal Code section 66.0701 et. seq. It requires the provision of recycling service for all single-family residences; and commercial facilities and multifamily residences with service for four cubic yards or more. In addition, the ordinance also requires development of educational materials to ensure occupants are informed about the City's ordinance and recycling services including information on types of recyclable materials accepted.

Construction and Demolition (C&D) Debris Diversion Deposit Program applies to all applicants for building, demolition, and removal permits. This ordinance requires that the applicant post a deposit (Table 1, C&D Debris Deposit Table). The deposit is not returned until the applicant demonstrates that a minimum amount of the material generated has been diverted from disposal in landfills. Mixed construction debris recycling facilities in San Diego are evaluated quarterly to determine how much of the throughput is recycled, and how much is a "residual" material requiring disposal. Facilities that accept mixed debris typically achieve a 68 percent or less diversion rate. Single materials recyclers, such as metal recyclers, often achieve a nearly 100 percent diversion rate. When comingled materials are sent to a mixed facility, the 75 percent diversion goal established by AB 341 will not be met. Depending on the project, to ensure that the overall diversion goal is attained, some materials must often be separated and trucked to facilities with higher diversion rates, such as aggregate and metal recyclers.

Table 1
C&D Debris Deposit Table

Building Category	Sq. Ft. Subject to Ordinance*	Deposit per Sq. Ft.	Range of Deposits
Residential New Construction	500-125,000 detached	\$0.40	\$200-\$50,000
	500-100,000 attached		\$200-\$40,000
Non-residential New Construction	1,000-25,000 commercial	\$0.20	\$200-\$5,000
	1,000-75,000 industrial		\$200-\$15,000
Non-residential Alterations	286 with no maximum	\$0.70	\$200 and up
Residential Demolition	286 with no maximum	\$0.70	\$200 and up
Non-residential Demolition	1,000 with no maximum	\$0.20	\$200 and up
Roof Tear-off	All projects	-	\$200
Residential Alterations	500 and above	-	\$1,000

<sup>\*</sup> Projects under the minimum square footage subject to the ordinance are exempt from the C&D debris recycling deposit.

#### 2.1 Exterior Refuse and Recyclable Material Storage Area Requirements

The Alexan – Fashion Valley Project will develop in one phase over an approximate 14- to 17-month period. Development is anticipated to begin mid-2017. Because the Alexan – Fashion Valley Project includes residential and nonresidential development, exterior refuse and recyclable material storage areas will be provided in accordance with City regulations per Chapter 14, Article 2, Division 8: Refuse and Recyclable Material Storage Regulations, §142.0820 and §142.0830.

## 2.2 Exterior Refuse and Recyclable Material Storage Areas for *Alexan - Fashion Valley Project*

Alexan – Fashion Valley Project would develop a mixed-use project with a total of 284 residential units and 8,897 square feet of commercial office use and restaurant space. Table 2, Minimum Exterior and Recyclable Material Storage Areas for Residential Development, shows the required amount of refuse and recyclable storage areas for the project's residential element. As shown in Table 2, the project would be required to provide 543.4 square feet each of exterior refuse and recyclable material storage area, for a total of 1,087 square feet of material storage area. Table 3, Minimum Exterior and Recyclable Material Storage Areas for Commercial and Industrial Development, shows the required amount of refuse and recyclable storage areas for the project's commercial office element. As shown in Table 3, the project would be required to provide 24 square feet each of exterior refuse and recyclable material storage area, for a total of 48 square feet of material storage area.

Table 2
Minimum Exterior Refuse and Recyclable Material Storage Areas for Residential Development

Number of Dwelling Units per Development	Minimum Refuse Storage Area per Development (square feet)	Minimum Recyclable Material Storage Area per Development (square feet)	Total Minimum Storage Area per Development (square feet)
2-6	12	12	24
7-15	24	24	48
16-25	48	48	96
26-50	96	96	192
51-75	144	144	288
76-100	192	192	384
101-125	240	240	480
126-150	288	288	576
151-175 336		336	672
176-200 384		384	768
201+	384 plus 48 square feet for every 25 dwelling units above 201	384 plus 48 square feet for every 25 dwelling units above 201	768 plus 96 square feet for every 25 dwelling units above 201

Source: City of San Diego Municipal Code, Chapter 14, Article 2, Division 8: Refuse and Recyclable Material Storage Regulations, §142.0820, Table 142-08B, effective January 1, 2000.

Table 3
Minimum Exterior Refuse and Recyclable Material Storage Areas for Commercial and Industrial Development

Gross Floor Area per Development (square feet)	Minimum Refuse Storage Area per Development (square feet)	Minimum Recyclable Material Storage Area per Development (square feet)	Total Minimum Storage Area per Development (square feet)
0 – 5,000	12	12	24
5,001 – 10,000	24	24	48
10,001 – 25,0000	48	48	96
25,001 – 50,000	96	96	192
50,001 – 75,000	144	144	288
75,001 – 100,000	192	192	384
100, 001+	192 plus 48 square feet for every	192 plus 48 square feet for every	384 plus 96 square feet for every
	25,000 square feet of building	25,000 square feet of building	25,000 square feet of building
	area above 100,001	area above 100,001	area above 100,001

Source: City of San Diego Municipal Code, Chapter 14, Article 2, Division 8: Refuse and Recyclable Material Storage Regulations, §142.0830, Table 142-08C, effective January 1, 2000.

#### 3.0 EXISTING CONDITIONS

The Alexan – Fashion Valley Project site encompasses approximately 4.92 previously graded and developed acres. The project site is bordered by Camino de la Reina to the north and west, SR-163 to the east, and SR-163/I-8 interchange to the south. The project site is currently developed with 69,651 square feet of multi-tenant office use.

#### 4.0 PROPOSED CONDITIONS

The proposed project involves demolition of existing structures (69,651 square feet) and on-site surface parking and construction of a mixed-use development consisting of residential, commercial office, and restaurant space. The project would be four to five stories in height and would have a total of 284 residential units, 5,760 square feet of commercial office use, and 3,137 square feet of restaurant space. A total of 475 parking spaces would be provided in a six-story, above ground parking structure, as well as surface parking lots. (See Figure 2, *Alexan* – *Fashion Valley Project*.)

Demolition and construction will be completed in a single phase over a 14 to 17 month period with construction anticipated to begin in mid-2017. Construction practices will comply with local, State, and Federal regulations regarding handling of building materials to ensure waste minimization requirements are met.

#### 5.0 DEMOLITION, GRADING, AND CONSTRUCTION WASTE

Demolition and construction will occur over a period of approximately 14 to 17 months. ESD staff would be present for an early pre-construction meeting to evaluate waste segregation, signage, and salvage.

#### 5.1 Demolition

The project site is the location of an existing office development. The demolition phase will include the deconstruction/demolition and removal of the existing office buildings, associated structures, asphalt parking and walkway areas, and interior landscaping. Approximately 10,110 tons of waste is expected to be generated during demolition. Approximately 9,698 tons of material would be recycled, to include trees, concrete, asphalt, foundations, building structure, masonry walls, curb and gutter, and switch gear and cable. Approximately 412 tons of debris would be disposed in a landfill, to include non-useable lumber, drywall, glass, miscellaneous trash, roofing paper, broken roof tiles, and floor tile. Table 4, *Alexan – Fashion Valley Project Waste Generation – Demolition*, summarizes the type and amount of demolition materials, as well as diversion/disposal.

Table 4
Alexan – Fashion Valley Project Waste Generation – Demolition

Material Type	Estimated Waste Quantity (tons)	Handling	Estimated Diversion (tons)	Estimated Disposal (tons)
		DEMOLITION WASTE		
Asphalt and Concrete <sup>1</sup>	3,032.76	Hanson Aggregates 9229 Harris Plant Road San Diego, CA 92126 (100% diversion)	3,032.76	
Foundations/ Building Structure	4,043.68	Vulcan Carroll Canyon Landfill and Recycle Site 10051 Black Mountain Road San Diego, CA 92126 (100% diversion)	4,043.68	
Brick/Masonry/ Tile	1,434.39	Vulcan Carroll Canyon Landfill and Recycle Site 10051 Black Mountain Road San Diego, CA 92126 (100% diversion)	1,434.39	
Cubs/Gutter	252.73	Vulcan Carroll Canyon Landfill and Recycle Site 10051 Black Mountain Road San Diego, CA 92126 (100% diversion)	252.73	
Switch Gear/Cable	1.01	Vulcan Carroll Canyon Landfill and Recycle Site 10051 Black Mountain Road San Diego, CA 92126 (100% diversion)	1.01	
Drywall	505.46	EDCO Station Transfer and Buy Back Center 8184 Commercial Street	353.82	151.64

<sup>&</sup>lt;sup>1</sup> Asphalt and concrete will be recycled and/or re-used on-site.

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		La Mesa, CA 91942		
		(70% diversion)		
Landscape Materials 303.28		Miramar Greenery 5180 Convoy Street San Diego, CA 92111 (100% diversion)	303.28	
Roofing Materials	252.73	<b>LEED Recycling</b> 8725 Miramar Place San Diego, CA 92121 (100% diversion)	252.73	
Floor Tile	1.01	Otay C&D/Inert Debris Processing Facility 1700 Maxwell Road Chula Vista, CA 91913 (76% diversion)	0.75	0.26
Glass	20.22	Otay C&D/Inert Debris Processing Facility 1700 Maxwell Road Chula Vista, CA 91913 (76% diversion)	15.16	5.06
Non-Useable Lumber	10.11	Otay C&D/Inert Debris Processing Facility 1700 Maxwell Road Chula Vista, CA 91913 (76% diversion)	7.58	2.53
Garbage/Trash	252.73	Miramar Landfill 5180 Convoy Street San Diego, CA 92111 (0% diversion)		252.73
TOTAL	10,110.11		9,697.89	412.22

#### 5.2 Grading

As discussed in Section 1.0, the project site has been completely graded and is currently developed with 69,561 square feet of office buildings and associated facilities. Following demolition activities, the project would require approximately 5,310 cubic yards of cut and 11,485 cubic yards of fill. Approximately 6,175 cubic yards of material would be imported. Therefore, no waste materials (earth) would be required to be disposed of as a result on project grading operations.

#### 5.3 Construction

Construction activities would generate packaging materials and unpainted wood, including wood pallets, and other miscellaneous debris. Construction debris would be separated on-site into material-specific containers to facilitate reuse and recycling and to increase the efficiency of waste reclamation and/or would be collected by a contracted waste hauler and separated at the facility. Source separation of materials at the construction site is essential to (1) ensure appropriate waste diversion rate, (2) minimize costs associated with transportation and disposal, and (3) facilitate compliance with the C&D ordinance. The types of construction waste anticipated to be generated include:

- Asphalt and Concrete
- Brick/Masonry/Tile
- Cardboard
- Carpet, Padding/Foam
- Drywall
- Landscape Debris
- Mixed C&D Debris
- Roofing Materials

- Scrap Metal
- Unpainted Wood and Pallets
- Garbage/Trash

According to the U.S. Environmental Protection Agency, commercial construction projects typically generate 3.9 pounds of construction waste per square feet of building construction and multi-family residential units generate approximately 4.0 pounds per square feet. Based on these estimates, construction waste generated by the *Alexan – Fashion Valley Project* is shown in Table 5, *Alexan – Fashion Valley Project Waste Generation*, and would total approximately 445 tons.

Table 5
Alexan – Fashion Valley Project Waste Generation

Building Type	Size (square feet)	Generation Rate (pounds per square foot)	Tons Generated
Commercial Office / Restaurant Space	8,897	3.9	16
Multi-Family Residential	236,440	4.0	429
		Total	445

In accordance with State diversion targets, a minimum of 75 percent of construction materials will be recycled. Materials to be recycled would be redirected to appropriate recipients selected from ESD's directory of facilities that recycle construction materials, scrap metal, and yard waste.

To facilitate management of construction materials, the developer shall identify one person or agency connected with the proposed development to act as Solid Waste Management Coordinator, whose responsibility it becomes to work with all contractors and subcontractors to ensure material separation and coordinate proper disposal and diversion of waste generated. The Solid Waste Management Coordinator will help to ensure all diversion practices outlined in this Waste Management Plan are upheld and communicate goals to all contractors involved efficiently.

The responsibilities of the Solid Waste Management Coordinator, include, but are not limited to, the following:

- Review the Solid Waste Management Plan including responsibilities of Solid Waste Management Coordinator.
- Review and update procedures as needed for material separation and verify availability of containers and bins needed to avoid delays.
- Review and update procedures for periodic solid waste collection and transportation to recycling and disposing facilities.
- The authority to issue stop work orders if proper procedures are not being allowed.

The contractors will perform daily inspections of the construction site to ensure compliance with the requirements of the Waste Management Plan and all other applicable laws and ordinances and report directly to Solid Waste Management Coordinator. Daily inspections will include verifying the availability and number of dumpsters based on amount of debris being generated, correct labeling of dumpsters, proper sorting and segregation materials, and salvaging of excess materials. Additionally, the following apply:

- Solid waste management coordinator will be responsible for educating contractors and subcontractors regarding waste management plan requirements and ensuring that contractors and subcontractors carry out the measures described in the WMP.
- Solid waste management coordinator will ensure ESD attendance at a Precon and assure compliance with segregation requirements, and verification of recycled content in base materials.
- Recycling areas will be clearly identified with large signs, approved by ESD, and sufficient amounts of material-specific bins will be provided for necessary segregation.
- Recycling bins will be placed in areas that are readily accessible to contractors/subcontractors and in areas that will minimize misuse or contamination by employees and the public.
- Solid waste management coordinator will be responsible for ensuring that contamination rates in bins remain below 5 percent by weight of the bin.

Table 6, Alexan – Fashion Valley Project Waste Generation – Construction, is included below to summarize the types of waste generated, the amount of each waste type diverted, and the overall amount remaining to be disposed of in landfills.

Table 6
Alexan – Fashion Valley Project Waste Generation – Construction

Material Type	Estimated Waste Quantity (tons)	Handling	Estimated Diversion (tons)	Estimated Disposal (tons)
		CONSTRUCTION WASTE		
Asphalt and Concrete	533.80	Hanson Aggregates 9229 Harris Plant Road San Diego, CA 92126 (100% diversion)	533.80	
Brick/Masonry/ Tile	152.52	Vulcan Carroll Canyon Landfill and Recycle Site 10051 Black Mountain Road San Diego, CA 92126 (100% diversion)	152.52	
Cardboard	14.99	Allan Company 6733 Consolidated Way San Diego, CA 92121 (100% diversion)	10.49	4.50
Carpet, Padding/Foam	7.62	<b>DFS Flooring</b> 10178 Willow Creek Road San Diego, CA 92131 (100% diversion)	7.62	
Drywall	106.76	EDCO Station Transfer and Buy Back Center 8184 Commercial Street La Mesa, CA 91942 (70% diversion)	74.73	32.03
Landscape Debris	Miramar Greenery		15.24	
Mixed C&D Debris	457.55	Otay C&D/Inert Debris Processing Facility 1700 Maxwell Road Chula Vista, CA 91913 (76% diversion)	343.16	114.39
Roofing Materials  7.62  Roofing Materials  7.62  LEED Recycling 8725 Miramar Place San Diego, CA 92121 (100% diversion)		7.62		

Scrap Metal	38.12	Allan Company 6733 Consolidated Way San Diego, CA 92121 (100% diversion)	26.68	11.44
Unpainted Wood & Pallets	182.99	Miramar Greenery 5180 Convoy Street San Diego, CA 92111 (100% diversion)	182.99	
Garbage/Trash	7.62	Miramar Landfill 5180 Convoy Street San Diego, CA 92111 (0% diversion)		7.62
TOTAL	1,524.79		1,354.85	169.98

Construction debris will be separated onsite into material-specific containers, corresponding to the materials types in Table 5, to facilitate reuse and recycling and to increase the efficiency of waste reclamation. The *Alexan – Fashion Valley Project* will implement a target of 20 percent recycled material and 75 percent for landfill diversion. As shown in Table 5, 89 percent of the construction materials generated by the project are expected to be diverted from landfills.

#### 6.0 OCCUPANCY

While the construction phase for the Alexan – Fashion Valley Project occurs as a one-time waste generation event as construction of the project proceeds, tenant/owner occupancy requires an ongoing plan to manage waste disposal to meet the waste reduction goals established by the City and State. The Alexan – Fashion Valley Project project will comply with the City's Recycling Ordinance. Solid waste collection would be provided by a private hauler.

The Alexan – Fashion Valley Project has been carefully planned to include a mix of commercial land uses and project features on site that will help to achieve the broad goals of smart growth and sustainable development. In accord with the City's Conservation Element, Alexan – Fashion Valley project seeks to reduce its "environmental footprint" through a variety of sustainable design features. The project's sustainable design features are presented in Table 7, Alexan – Fashion Valley Project Sustainable Design Features, below.

Table 7

Alexan – Fashion Valley Project Sustainable Design Features

#### SITE DESIGN

- At least one principal participant of the project team is a LEED Accredited Professional.
- Located within 1/4-mile of one or more transit stops.
- Provide secure bicycle racks and/or storage.
- Use of materials with 20 percent recycled content target.

#### **GRADING and CONSTRUCTION**

- Create and implement an erosion and sediment control plan for all construction.
- Protect stored on-site or installed absorptive materials from moisture damage.
- Composite wood and agrifiber products will contain no added urea-formaldehyde resins.
- Individual lighting controls will be provided for a minimum of 90% of building occupants.

#### **PARKING**

- Size parking capacity to meet but not exceed minimum parking requirements.
- Provide preferred parking for carpools or vanpools.
- Place a minimum of 40% of parking spaces under cover.

#### EXTERIOR LIGHTING

• Design exterior lighting so that all site and building mounted luminaires produce a maximum initial luminance value no greater than 0.20 horizontal and vertical foot-candles at the site boundary and no greater than 0.01 horizontal foot-candles 15 feet beyond the site.

#### **BUILDING DESIGN FEATURES**

- Use water-conserving fixtures.
- Buildings designed to comply with Title 24 requirements.
- Zero use of CFC-based refrigerants.
- Select refrigerants and HVAC&R that minimize or eliminate the emission of compounds that contribute to ozone depletion and global warming.
- Will not use fire suppression systems that contain ozone-depleting substances (CFCs, HCFCs, or Halons).

#### SOLID WASTE MANAGEMENT/RECYCLING

- Target 20 percent recycled content of construction materials and 80 percent for landfill diversion.
- On-site recycling services provided to all tenants/residents.
- Easily accessible areas provided to serve buildings that are dedicated to the collection and storage of nonhazardous materials for recycling.
- Adherence to recycling services are required by Section 66.0707 of the City of San Diego Land Development Code.
- Tenants/residents participation in a recycling program by separating recyclable materials from other solid waste and depositing the recyclable materials in the recycling container provided for the occupants.

#### **LANDSCAPE**

#### **Irrigation**

- State of the art equipment that distributes water in controlled amounts and at controlled times to maximize water efficiency and optimize plant growth.
- Irrigation systems control to allow water to be distributed to plant material with similar watering needs to avoid over/underwatering.
- Use of weather and rain sensors to monitor current conditions and control the system accordingly.
- Utilization of reclaimed water (when available) for irrigation minimizing the need for potable water in the landscape.

#### **Planting**

- Grouping of plant material based on the water demands for the specific plant material while still achieving the
  overall design intent.
- Selection of plant material its adaptability to the region and climate.
- Careful and selective use of enhanced planting (lusher material and seasonal color requiring more water and maintenance) where they have the most impact on the user.
- · Use of native or low water/low maintenance material in outlying areas away from the general user.
- Limited use of turf. Where used, select turf varieties for their durability, maintenance needs and low water consumption.
- Use of trees throughout the project to provide shading to users and reduce heat gains on buildings and the heat island effect throughout the site.
- Selection of mix of deciduous trees to allow shade in the summer and sun penetration in the cooler winter months.

#### **Materials**

- Use of recycled materials, where appropriate.
- Use of precast concrete pavers, decomposed granite and post consumer products.
- All planting areas include a 2" layer of a recycled organic mulch to maintain soil moisture, soil temperature and reduce weeding.
- Selection of lighter colored hardscape materials to reduce the heat island effect.

In addition to the energy efficient components provided in Table 4, the project would comply with the Uniform Building Code (UBC) and Title 24 requirements for building materials and insulation in order to reduce unnecessary loss of energy.

The project proposes to utilize planters throughout the project for Low Impact Development (LID) storm water treatment. Additionally, pervious concrete/asphalt is proposed for applicable areas onsite, including under parking stalls along the east side of the property.

As a result of the recommended site design, source control measures, and treatment control measures, water quality exceedances are not anticipated, and pollutants are not expected within project runoff that would adversely affect beneficial uses in downstream receiving waters. The project would implement controls designed to limit discharges to the appropriate standard. The project complies with the requirements of the State Regional Water Quality Control Board concerning coverage under the General Construction Permit.

The proposed Landscape Concept Plan utilizes a low water use planting palette. Lawn is only used in recreation areas. Native and drought-tolerant shrubs are used throughout the landscaping for the project. Circulation throughout the project is accentuated with a hierarchy of landscape treatments. Enhanced paving is used to signify pedestrian/vehicle interaction areas. Vehicle nodes with planted pop-outs break up long linear drives and surface parking. Street trees are proposed to define vehicle/pedestrian spaces and to provide shade and scale to the street scene.

#### 6.1 Implementation

The following table expresses the anticipated refuse and recyclable storage requirements based on Table 142-08B and 142.08C of the City of San Diego Municipal Code.

Table 8

Minimum Exterior and Recyclable Material Storage Areas for the Alexan – Fashion Valley Project

Land Use	Gross Floor Area/Units	Minimum Refuse Storage Area (square feet)	Minimum Recyclable Material Storage Area (square feet)	Total Minimum Storage Area (square feet)
Residential	284 units	543.4	544	1,088
Commercial / Restaurant Use	8,897 sq ft	24	24	48
TOTAL		568	568	1,136

The Alexan – Fashion Valley Project would be required to provide a minimum of 568 square feet refuse storage area and a minimum of 568 square feet recyclable material storage area for a total of approximately 1,136 square feet minimum exterior refuse and recyclable material storage area.

As shown in Table 9, Estimated Solid Waste Generation from the Alexan – Fashion Valley Project – Occupancy Phase, during occupancy, the expected generated waste per year from the Alexan – Fashion Valley Project when fully occupied would be approximately 366 tons.

Table 9
Estimated Solid Waste Generation from the Alexan – Fashion Valley Project – Occupancy Phase

Use	Intensity	Waste Generation Rate	Estimated Waste Generated (tons/year)
Residential	284 units	1.2 tons/year/unit	341
Commercial-Restaurant	8,897 sq ft	0.0028 tons/year/sq ft	25
		TOTAL	366

On-site recycling services shall be provided to all tenants/residents within Alexan – Fashion Valley Project. Tenants/residents within Alexan – Fashion Valley Project that receive solid waste collection

service shall participate in a recycling program by separating recyclable materials from other solid waste and depositing the recyclable materials in the recycling container provided for the occupants. Recycling services are required by Section 66.0707 of the City of San Diego Land Development Code. Based on current requirements, these services shall include the following:

- Collection of recyclable materials as frequently as necessary to meet demand;
- Collection of plastic bottles and jars, paper, newspaper, metal containers, cardboard, and glass containers;
- Collection of other recyclable materials for which markets exist, such as scrap metal, wood pallets
- Collection of food waste for recycling by composting, where available (prior to issuance of building and occupancy permits, the project proponent will meet with representatives from ESD to ensure that their educational materials and haulers can comply with the requirements for this service);
- Use of recycling receptacles or containers which comply with the standards in the Container and Signage Guidelines established by the City of San Diego Environmental Services Department;
- Designated recycling collection and storage areas; and
- Signage on all recycling receptacles, containers, chutes, and/or enclosures which complies
  with the standards described in the Container and Signage Guidelines established by the
  City of San Diego Environmental Services Department

As required by Section 66.0707 of the City of San Diego Land Development Code, the building management or other designated personnel shall ensure that occupants are educated about the recycling services as follows:

- Information, including the types of recyclable materials accepted, the location of recycling containers, and the occupants responsibility to recycle shall be distributed to all occupants annually;
- All new occupants shall be given information and instructions upon occupancy; and
- All occupants shall be given information and instructions upon any change in recycling service to the commercial facility.

#### 6.2 Landscaping and Green Waste Recycling

Plant material selection will be guided by the macro-and micro-climate characteristics of the project site and surrounding region to encourage long-term sustainability without the excessive use of water pesticides and fertilizers. Irrigation of these areas, where practical, will utilize reclaimed water applied via low precipitation rate spray heads, drip emitters, or other highly efficient systems. Landscape maintenance would include the collection of green waste and disposal of green waste at recycling centers that accept green waste. This will help further reduce the waste generated by developments within *Alexan* – *Fashion Valley Project* during the occupancy phases.

#### 7.0 CONCLUSION

The City of San Diego Development Services Department is requiring that this WMP be prepared and submitted to the City of San Diego's ESD.

This WMP will be implemented to the fullest degree of accuracy and efficiency. Additionally, the project will be required to adhere to City ordinances, including the Construction and Demolition Debris Diversion Deposit Program, the City's Recycling Ordinance, and the Refuse and Recyclable Materials Storages Regulations. The WMP plan for the Alexan – Fashion Valley Project is designed to implement and adhere to all city ordinance and regulations with regards to waste management. The measures in the WMP would ensure that impacts are mitigated to below a level of significance.

Prior to the issuance of any grading or construction permits, the Solid Waste Coordinator will ensure ESD's attendance at a precon. The Solid Waste Coordinator will ensure that 1) the proposed approach to contractor education is approved, 2) the written specifications for base materials, concrete pavers, decomposed granite, and mulch, is approved, and 3) that the ESD inspector approves the separate waste containers, signage, and hauling contract(s) for the following materials:

- Asphalt/concrete
- Brick/masonry/Tile
- Cardboard
- Carpet/padding/foam
- Drywall
- Landscape debris
- Mixed C&D debris
- Scrap metal
- UNTREATED woodwaste
- Refuse

The project will be designed to achieve 75 percent of construction waste to be source reduced and/or recycled. While diversion activities during occupancy will achieve only 40 percent diversion and will not achieve the State target of 75 percent, the project incorporates several measures above and beyond the requirements of local ordinance.

- First, the project exceeds ordinance requirements and even the State waste reduction target during construction.
- Second, the project includes landscaping that will reduce yardwaste, and will provide transportation to a composting facility for the yard waste that is produced. The project proponent will ensure that ESD reviews the landscaping plans and hauling contract for the facility to verify that waste reduction goals are met.
- Third, the project would include LEED measures to reduce waste.

The project will target 20 percent recycled content of construction materials and 75 percent for landfill diversion.

These measures ensure that the waste generated by the project will be properly managed and that solid waste services will not be impacted.

The following standard mitigation applies to the project to reduce cumulative impacts on solid waste to below a level of significance:

#### 1.0 Prior to Permit Issuance or Bid opening/Bid award

#### A. LDR Plan check

- 1. Prior to the issuance of any construction permit, including but is not limited to, demolition, grading, building or any other construction permit, the Assistant Deputy Director (ADD) Environmental Designee shall verify that the all the requirements of the Refuse & Recyclable Materials Storage Regulations and all of the requirements of the waste management plan are shown and noted on the appropriate construction documents. All requirements, notes and graphics shall be in substantial conformance with the conditions and exhibits of the associated discretionary approval.
- 2. The construction documents shall include a waste management plan.
- 3. Notification shall be sent to:

MMC Environmental Review Specialist Development Service Department 9601 Ridgehaven Court Ste. 220, MS 1102 B San Diego, California 92123 1636 (619) 980 7122

Environmental Services Department (ESD) 9601 Ridgehaven Court Ste. 210, MS 1102 A San Diego, California 92123 1636 (858) 573-1236

#### II. Prior to Start of Construction

- A. Grading and Building Permit Prior to issuance of any grading or building permit, the permittee shall be responsible to arrange a preconstruction meeting to coordinate the implementation of the MMRP. The Precon Meeting that shall include: the Construction Manager, Building/Grading Contractor; MMC; and ESD and the Building Inspector and/or the RE (whichever is applicable) to verify that implementation of the waste management plan shall be performed in compliance with the plan approved by LDR and the San Diego ESD, to ensure that impacts to solid waste facilities are mitigated to below a level of significance.
  - 1. At the Precon Meeting, the Permittee shall submit reduced copies (11" x 17") of the approved waste management plan, the RE, BI, MMC, and ESD.
  - 2. Prior to the start of construction, the Permittee/Construction Manager shall verify that the project targets 20 percent recycled content for construction materials and 75 percent of construction materials for landfill diversion.
  - 3. Prior to the start of construction, the Permittee/Construction Manager shall submit a construction schedule to the RE, BI, MMC, and ESD.

#### III. During Construction

The Permittee/Construction Manager shall call for inspections by the RE/BI and both MMC and ESD, who will periodically visit the demolition/construction site to verify implementation of the waste management plan. The Consultant Site Visit Record (CSVR) shall be used to document the Daily Waste Management Activity/progress.

#### IV. Post Construction

A. Within 30 days after the completion of the implementation of the Mitigation Monitoring Reporting Program (MMRP), for any demolition or construction permit, a final results report shall be submitted to both MMC and ESD for review and approval to the satisfaction of the City. MMC will coordinate the approval with ESD and issue the approval notification. ESD will review/approve City Recycling Ordinance-required educational materials prior to occupancy.

### CITY OF SAN DIEGO

# PRIORITY DEVELOPMENT PROJECT (PDP) PRELIMINARY STORM WATER QUALITY MANAGEMENT PLAN (SWQMP) FOR ALEXAN, FASHION VALLEY

#### ENGINEER OF WORK:

CORY SCHRACK

R.C.E. 65976

11-22-2016

DATE

#### PREPARED FOR:

TRAMMEL CROW RESIDENTIAL 5790 FLEET STREET, SUITE 140 CARLSBAD, CA 92008 (760) 431-3366

PREPARED BY: NASLAND ENGINEERING 4740 RUFFNER STREET SAN DIEGO, CA 92111 (858) 292-7770

> DATE: November 22, 2016

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- Summary of PDP Structural BMPs
- FORM DS-563: Permanent BMP Construction, Self Certification Form
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  - o Attachment 1a: DMA Exhibit
  - o Attachment 1b: Tabular Summary of DMAs and Design Capture Volume Calculations
  - o Attachment 1c: Harvest and Use Feasibility Screening (when applicable)
  - O Attachment 1d: Categorization of Infiltration Feasibility Condition (when applicable)
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  - o Attachment 2c: Geomorphic Assessment of Receiving Channels
  - o Attachment 2d: Flow Control Facility Design
- Attachment 3: Structural BMP Maintenance Plan
  - o Attachment 3a: Structural BMP Maintenance Thresholds and Actions
  - o Attachment 3b: Draft Maintenance Agreement (when applicable)
- Attachment 4: Copy of Plan Sheets Showing Permanent Storm Water BMPs
- Attachment 5: Project's Drainage Report
- Attachment 6: Project's Geotechnical and Groundwater Investigation Report

#### **CERTIFICATION PAGE**

Project Name: Alexan, Fashion Valley Permit Application Number:

I hereby declare that I am the Engineer in Responsible Charge of design of storm water BMPs for this project, and that I have exercised responsible charge over the design of the project as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the requirements of the BMP Design Manual, which is based on the requirements of SDRWQCB Order No. R9-2013-0001 (MS4 Permit).

I have read and understand that the City Engineer has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the BMP Design Manual. I certify that this SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable source control and site design BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this SWQMP by the City Engineer is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of storm water BMPs for this project, of my responsibilities for project design.

	RCE 65976, Exp. 6/30/2018
Engineer of Work's Signature, PE N	Number & Expiration Date
Cory Schrack	
Print Name	
Nasland Engineering	
Company	
11-22-2016	_
Date	

Engineer's Seal:



## SUBMITTAL RECORD

Use this Table to keep a record of submittals of this SWQMP. Each time the SWQMP is re- submitted, provide the date and status of the project. In last column indicate changes that have been made or indicate if response to plancheck comments is included. When applicable, insert response to plancheck comments behind this page.

Submittal Number	Date	Project Status	Changes
1	5/10/2016	<ul><li>☑ Preliminary Design/ Planning/ CEQA</li><li>☐ Final Design</li></ul>	Initial Discretionary Submittal
2	7/08/2016	<ul><li>☑ Preliminary Design/ Planning/ CEQA</li><li>☐ Final Design</li></ul>	2 <sup>nd</sup> Review Cycle
3	8/24/2016	<ul><li>☑ Preliminary Design/ Planning/ CEQA</li><li>☐ Final Design</li></ul>	3 <sup>rd</sup> Review Cycle
4	10/26/2016	<ul><li>☑ Preliminary Design/ Planning/ CEQA</li><li>☐ Final Design</li></ul>	4th Review Cycle
5	11/22/2016	☐ Preliminary Design/ Planning/ CEQA☐ Final Design	5th Review Cycle

#### PROJECT VICINITY MAP

Project Name: Alexan, Fashion Valley

Permit Application Number:



Source: Google Maps





## Storm Water Requirements Applicability Checklist

FORM

DS-draft

August 2015

Project Add	dress:		Project Number (for City Use Only):
All construin the Sto	rm Water Standards Manual. Som	nt construction Bl sites are addition	irements: SMPs in accordance with the performance standards ionally required to obtain coverage under the State y the State Water Resources Control Board.
tinue to	PART B.		ired to submit a SWPPP or WPCP, con-
PART A:	Determine Construction Pha	se Storm Wate	er Requirements.
with Cor	oject subject to California's statewic astruction Activities, also known as d disturbance greater than or equal	the State Constru	ES permit for Storm Water Discharges Associated uction General Permit (CGP)? (Typically projects
☐ Yes;	SWPPP required, skip questions 2-4	No; next o	question
2. Does the bing, exc	e project propose construction or det cavation, or any other activity that i	nolition activity, i esults in ground o	including but not limited to, clearing, grading, grub- disturbance and contact with storm water runoff?
☐ Yes;	WPCP required, skip 3-4	No; next o	question
3. Does the purpose	e project propose routine maintenan of the facility? (Projects such as pip	ce to maintain or eline/utility repla	riginal line and grade, hydraulic capacity, or original acement)
☐ Yes;	WPCP required, skip 4	☐ No; next q	question
4. Does the	project only include the following l	Permit types listed	ed below?
• Electr Per-m	rical Permit, Fire Alarm Permit, Fir nit, Spa Permit.	e Sprinkler Permi	it, Plumbing Permit, Sign Permit, Mechanical
Indivisidewa	idual Right of Way Permits that exc ılk repair: water service, sewer latera	usively include o l, storm drain latera	one of the following activities and associated curb/ al, or dry utility service.
the fo	of Way Permits with a project foot; llowing activities: curb ramp, sidew curb and gutter replacement, and re	alk and driveway	0 linear feet that exclusively include only ONE of y apron replacement, pot holing, geotechnical bor- roachments.
☐ Ye	es; no document required		
Check	cone of the boxes to the right, and c	ontinue to PART	B:
۵	If you checked "Yes" for question a SWPPP is REQUIRED. Co	1. ntinue to PART	ГВ
	If you checked "No" for question a WPCP is REQUIRED. If the of ground disturbance AND has entire project area, a Minor WP	1, and checked "Ye project proposes less than a 5-foot CP may be requir	Yes" for question 2 or 3, s less than 5,000 square feet it elevation change over the red instead. <b>Continue to PART B.</b>
	If you checked "No" for all quest PART B <b>does not apply and r</b>	ions 1-3, and chec o document is r	cked "Yes" for question 4 required. Continue to Section 2.
	nation on the City's construction BMP requirements ructing.shtml	as well as CGP requirer	ements can be found at: www.sandiego.gov/stormwater/regulations/sw-
	Printed on recycled paper Vi	sit our web site at www	w.sandiego.gov/development-services.

City of San Diego
TRANSPORTATION
& STORM WATER

Upon request, this information is available in alternative formats for persons with disabilities.

DS-draft (08-15)

Pa	ge 2 of 4	City of San Diego • Development Services Department • Storm Water Requirements Applica	ability Checklist
	This prior WPCP. The struction quality." approach specific se of Special struction	EDetermine Construction Site Priority.  itization must be completed within this form, noted on the plans, and included in the secity reserves the right to adjust the priority of projects both before and after construction projects are assigned an inspection frequency based on if the project has a "high threa The City has aligned the local definition of "high threat to water quality" to the risk desof the State Construction General Permit (CGP). The CGP determines risk level based diment risk and receiving water risk. Additional inspection is required for projects with Biological Significance (ASBS) watershed. NOTE: The construction priority does NO BMP requirements that apply to projects; rather, it determines the frequency of inspected by city staff.	ction. Con- t to water termination I on project thin the Areas T change con-
Co	mplete	PART B and continued to Section 2	
1.		ASBS	
		a. Projects located in the ASBS watershed. A map of the ASBS watershed can be fo $<\!placeholder$ for ASBS map link>	und here
2.		High Priority	
		a. Projects 1 acre or more determined to be Risk Level 2 or Risk Level 3 per the Con- General Permit and not located in the ASBS watershed.	struction
		b. Projects 1 acre or more determined to be LUP Type 2 or LUP Type 3 per the Cons General Permit and not located in the ASBS watershed.	struction
3.		Medium Priority	
		a. Projects 1 acre or more but not subject to an ASBS or high priority designation.	
		b. Projects determined to be Risk Level 1 or LUP Type 1 per the Construction Gene not located in the ASBS watershed.	ral Permit and
4.		Low Priority	
		a. Projects not subject to ASBS, high, or medium priority designation.	
Ac Pr Pr ve	lditional i ART C: I ojects tha	2. Permanent Storm Water BMP Requirements.  Information for determining the requirements is found in the Storm Water Standards Determine if Not Subject to Permanent Storm Water Requirements. It are considered maintenance, or otherwise not categorized as "new development projects" according to the Storm Water Standards Manual are not subject to Permanent Projects according to the Storm Water Standards Manual are not subject to Permanent Projects.	ects" or "rede-
Pe	ermaner	checked for any number in Part C, proceed to Part F and check "Not stated to the state of the Storm Water BMP Requirements".  Checked for all of the numbers in Part C continue to Part D.	Subject to
1.		te project only include interior remodels and/or is the project entirely within an genclosed structure and does not have the potential to contact storm water?	☐ Yes ☐ No
2.		e project only include the construction of overhead or underground utilities without g new impervious surfaces?	☐ Yes ☐ No
3.	roof or lots or	the project fall under routine maintenance? Examples include, but are not limited to: exterior structure surface replacement, resurfacing or reconfiguring surface parking existing roadways without expanding the impervious footprint, and routine ment of damaged pavement (grinding, overlay, and pothole repair).	☐ Yes ☐ No



	of San Diego • Development Services Department • Storm Water Requirements Applicability Checklist	Page 3	of 4
4.	Does the project only consists of new sidewalk construction within the existing impervious footprint of existing roads without changing sheet flow to concentrated flow?	☐ Yes	☐ No
5.	Does the project only consists of new pedestrian ramps within the existing impervious footprint of existing roads?	☐ Yes	☐ No
6.	Does the project only consists of new bike lanes within the existing impervious footprint of existing roads without changing sheet flow to concentrated flow?	☐ Yes	☐ No
	RTD: Determine if Project is a Priority Development Project (PDP).  ojects that match one of the definitions below are subject to additional requirements including pr	eparatio	n of a
Sto	rm Water Quality Management Plan (SWQMP).		
If '	"yes" is checked for any number in PART D, continue to PART E.		
	"no" is checked for every number in PART D, continue to PART F and check the led "Standard Development Project".	e box l	a-
1.	New Development that creates 10,000 square feet or more of impervious surfaces collectively over the project site. This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.	☐ Yes	☐ No
2.	Redevelopment project that creates and/or replaces 5,000 square feet or more of impervious surfaces on an existing site of 10,000 square feet or more of impervious surfaces. This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.	☐ Yes	□ No
3.	New development or redevelopment of a restaurant. Facilities that sell prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC 5812), and where the land development creates and/or replace 5,000 square feet or more of impervious surface.	g Yes	☐ No
4.	New development or redevelopment on a hillside. The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site) and where the development will grade on any natural slope that is twenty-five percent or greater.	☐ Yes	□ No
5.	New development or redevelopment of a parking lot that creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site).	☐ Yes	☐ No
6.	New development or redevelopment of streets, roads, highways, freeways, and driveways. The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site).	☐ Yes	☐ No
7.	New development or redevelopment discharging directly to an Environmentally Sensitive Area. The project creates and/or replaces 2,500 square feet of impervious surface (collectively over project site), and discharges directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands).	☐ Yes	□ No
8.	New development or redevelopment projects of a retail gasoline outlet that create and/or replaces 5,000 square feet of impervious surface. The development project meets the following criteria: (a) 5,000 square feet or more or (b) has a projected Average Daily Traffic of 100 or more vehicles per day.	☐ Yes	☐ No
9.	New development or redevelopment projects of an automotive repair shops that creates and/or replaces 5,000 square feet or more of impervious surfaces. Developmen projects categorized in any one of Standard Industrial Classification (SIC) codes 5013, 5014,		☐ No



Page 4 of 4 City of San Diego • Development Services Department	artment • Storm Water Requirements Applicability Cl	necklist
10. Other Pollutant Generating Project. The project results in the disturbance of one or more acres of land post construction, such as fertilizers and pesticides. The less than 5,000 sf of impervious surface and where ad use of pesticides and fertilizers, such as slope stabilizes the square footage of impervious surface need not incovehicle use, such as emergency maintenance access on with pervious surfaces of if they sheet flow to surround	d and is expected to generate pollutants This does not include projects creating Ided landscaping does not require regular ation using native plants. Calculation of Iude linear pathways that are for infrequent r bicycle pedestrian use, if they are built	es 🖵 No
PART E: PDP Exempt Requirements.		
PDP Exempt projects are required to impleme	ent site design and source control BMPs	š.
If "yes" was checked for any questions in Part beled "PDP Exempt."	E, continue to Part F and check the box	x la-
If "no" was checked for all questions in Part E,	, continue to Part F.	
1. Does the project ONLY include new or retrofit sidewa	lks, bicycle lanes, or trails that:	
<ul> <li>Are designed and constructed to direct storm water non-erodible permeable areas? Or;</li> </ul>	r runoff to adjacent vegetated areas, or other	
<ul> <li>Are designed and constructed to be hydraulically d</li> <li>Are designed and constructed with permeable pave Green Streets guidance in the City's Storm Water S</li> </ul>	ements or surfaces in accordance with the	
Yes; PDP exempt requirements apply	☐ No; next question	
and constructed in accordance with the Green Streets  Yes; PDP exempt requirements apply  No;	project not exempt. PDP requirements apply	<u>Manuar</u> ;
PART F: Select the appropriate category based	l on the outcomes of PART C through P	ART E.
1. The project is <b>NOT SUBJECT TO STORM WATER</b>	R REQUIREMENTS.	
2. The project is a <b>STANDARD DEVELOPMENT PR</b> BMP requirements apply. See the <u>Storm Water Stan</u>	OJECT. Site design and source control dards Manual for guidance.	
3. The project is <b>PDP EXEMPT</b> . Site design and source See the Storm Water Standards Manual for guidance		
<ol> <li>The project is a PRIORITY DEVELOPMENT PRO structural pollutant control BMP requirements apply for guidance on determining if project requires hydro</li> </ol>	y. See the Storm Water Standards Manual	
Name of Owner or Agent (Please Print):	Title:	
Signature:	Date:	
		- 41



## Applicability of Permanent, Post-Construction

Storm Water BMP Requirements			Form I-1
(Storm Water Intake Form for all Development Permit Applications)			
Project Ic	dentification		
Project Name: Alexan, Fashion Valley			
Permit Application Number:			Date: 10/26/16
Determination			
The purpose of this form is to identify permanent, p This form serves as a short <u>summary</u> of applicable that will serve as the backup for the determination of	requirements, in requirements.	some cases	s referencing separate forms
Answer each step below, starting with Step 1 and pro-			
Refer to BMP Design Manual sections and/or separar	te forms referen	ced in each s	step below.
Step	Answer	Progressi	on
Step 1: Is the project a "development project"? See Section 1.3 of the BMP Design Manual for	X Yes	Go to Ste	p 2.
guidance.	No	Stop. Permanent BMP requirements do not apply. No SWQMP will be required. Provide discussion below.	
Discussion / justification if the project is <u>not</u> a "deveremodels within an existing building):  Step 2: Is the project a Standard Project, Priority	Standard	Stop.	roject includes <u>only</u> interior
Development Project (PDP), or exception to PDP definitions?	Project		Project requirements apply.
To answer this item, see Section 1.4 of the BMP Design Manual in its entirety for guidance, AND complete Storm Water Requirements Applicability	⊠ PDP	PDP requ PDP SWC Go to Ste	-
Checklist.	Exception to PDP definitions		Project requirements apply. discussion and list any

Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:



Form I	-1 Page 2	
Step	Answer	Progression
Step 3. Is the project subject to earlier PDP requirements due to a prior lawful approval? See Section 1.10 of the BMP Design Manual for guidance.	☐ Yes	Consult the City Engineer to determine requirements.  Provide discussion and identify requirements below.  Go to Step 4.  BMP Design Manual PDP requirements apply.
		Go to Step 4.
Discussion / justification of prior lawful approval, approval does not apply):	and identify req	uirements ( <u>not required if prior lawful</u>
Step 4. Do hydromodification control requirements apply? See Section 1.6 of the BMP Design Manual for guidance.	Yes	PDP structural BMPs required for pollutant control (Chapter 5) and hydromodification control (Chapter 6). Go to Step 5.
	⊠ No	Stop. PDP structural BMPs required for pollutant control (Chapter 5) only. Provide brief discussion of exemption to hydromodification control below.
Discussion / justification if hydromodification control	ol requirements of	
Per the San Diego Storm Water Standards Manual, de downstream of confluence with San Vicente Creek. 'discharge to outlets in the San Diego River and is thu river bottom and 100 year flood plain. Energy dissipand will not affect critical coarse sediment yield areas.	The existing cons exempt. The cation includes sp	veyance system that the project will outlets are also in elevations between the
Step 5. Does protection of critical coarse sediment yield areas apply? See Section 6.2 of the BMP Design Manual for guidance.	Yes	Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2). Stop.
	⊠ No	Management measures not required for protection of critical coarse sediment yield areas.  Provide brief discussion below.  Stop.
Discussion / justification if protection of critical coar	se sediment yiel	
Per the August 2015 Draft Storm Water Standards M do not apply.	anual, Appendix	t H, critical coarse sediment yield areas



Site Information Checklist For PDPs Project Summary Information Form I-3B				
Project Name	Alexan, Fashion Valley			
Project Address	123 Camino De La Reina San Diego, CA 92108			
Assessor's Parcel Number(s) (APN(s))	437-260-38, 39, 40			
Permit Application Number				
Project Watershed	Select One:  San Dieguito River  Penasquitos  Mission Bay  San Diego River  San Diego Bay  Tijuana River			
Hydrologic subarea name with Numeric Identifier up to two decimal places (9XX.XX)	San Diego Hydrologic Unit 907.00			
Parcel Area (total area of Assessor's Parcel(s) associated with the project)	4.94 Acres ( <u>215,186</u> Square Feet)			
Area to be disturbed by the project (Project Area)				
Project Proposed Impervious Area (subset of Project Area)				
Project Proposed Pervious Area (subset of Project Area)  Note: Proposed Impervious Area + Proposed Perv This may be less than the Parcel Area.	<u>0.80</u> Acres ( <u>34,820</u> Square Feet) ious Area = Area to be Disturbed by the Project.			
The proposed increase or decrease in impervious area in the proposed condition as compared to the pre-project condition.	<u>+17.6</u> %			

Storm Water Standards
Part 1: BMP Design Manual

A-19

City of San Diego
TRANSPORTATION
& STORM WATER

Form I-3B Page 2 of 9
Description of Existing Site Condition and Drainage Patterns
Current Status of the Site (select all that apply):  Existing development
Previously graded but not built out
Agricultural or other non-impervious use
☐ Vacant, undeveloped/natural
Description / Additional Information:
The project site is currently developed consisting of a mix of residential and commercial buildings as well as a
few parking lots. Most of the project site slopes significantly from East to West.
Existing Land Cover Includes (select all that apply):  Vegetative Cover
Non-Vegetated Pervious Areas
Impervious Areas
Impervious riteas
Description / Additional Information:
Most of the project site is impervious area consisting of parking lots and buildings. A small lot within the site
has been recently demolished and is currently a dirt lot.
Underlying Soil belongs to Hydrologic Soil Group (select all that apply):
□ NRCS Type A □ NRCS Type B
□ NRCS Type C
NRCS Type D
Approximate Depth to Groundwater (GW):
GW Depth < 5 feet
∑ 5 feet < GW Depth < 10 feet
☐ 10 feet < GW Depth < 20 feet ☐ GW Depth > 20 feet
G w Depth > 20 feet
Existing Natural Hydrologic Features (select all that apply):
Watercourses
Seeps
□ Springs
Wetlands
None
Description / Additional Information:



#### Form I-3B Page 3 of 9

#### Description of Existing Site Topography and Drainage:

How is storm water runoff conveyed from the site? At a minimum, this description should answer:

- 1. Whether existing drainage conveyance is natural or urban;
- 2. If runoff from offsite is conveyed through the site? If yes, quantification of all offsite drainage areas, design flows, and locations where offsite flows enter the project site and summarize how such flows are conveyed through the site;
- 3. Provide details regarding existing project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, and natural and constructed channels;
- 4. Identify all discharge locations from the existing project along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide summary of the pre-project drainage areas and design flows to each of the existing runoff discharge locations.

#### **Description / Additional Information:**

Existing drainage conveyance is classified as urban.

Offsite storm drain along North East corner of property to be redirected.

Existing storm water is conveyed from sheet flow of roof runoff, parking lots (2), concrete walkways, and landscaped areas to existing storm drain systems on Camino De La Reina. Existing onsite drainage facilities include two curb inlets, grassy swale, area drains, courtyard storm drain, and flow through planters.

The existing conditions are considered to be four separate basins. Storm water from Basin 1 flows through the landscaped area on the east side of the property, sheet flows south towards a Type B curb inlet, and ultimately outlets to an existing 60" storm drain main on Camino De La Reina with a calculated  $Q_{100}$  of 6.45 cfs. Basin 2 flows west through a pipe centered between the four buildings and outlets into a landscaped area, ultimately discharging to existing 60" storm drain main on Camino De La Reina with  $Q_{100}$ .= 3.14 cfs Basin 3 flows west into landscaping and discharges to existing curb inlet on Camino De La Reina with  $Q_{100}$ .= 1.24 cfs. Basin 4 sheet flows northeast and outlets onto Camino De La Reina and ultimately enters a curb inlet with  $Q_{100}$ .= 6.54 cfs.



#### Form I-3B Page 4 of 9

#### Description of Proposed Site Development and Drainage Patterns

Project Description / Proposed Land Use and/or Activities:

The project proposes an apartment development of approximately 85 units and 5,000 square feet of retail

space. In addition, a subterranean parking garage will be constructed. List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features): Buildings, Parking lots, hardscape List/describe proposed pervious features of the project (e.g., landscape areas): Landscape areas, Bio-filtration BMPs Does the project include grading and changes to site topography? X Yes No Description / Additional Information: The project site will be graded to prepare the site for the new buildings. The northerly portion of the site will be raised to be above the FEMA flood plain. Does the project include changes to site drainage (e.g., installation of new storm water conveyance systems)? X Yes ☐ No If yes, provide details regarding the proposed project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural and constructed channels, and the method for conveying offsite flows through or around the proposed project site. Identify all discharge locations from the proposed project site along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide a summary of pre and post-project drainage areas and design flows to each of the runoff discharge locations. Reference the drainage study for detailed calculations. Description / Additional Information: Impervious runoff from roofs/concrete will be directed to sixteen (16) bio-infiltration BMPs throughout the site. Eleven (11) of these BMPs will be treated as partial infiltration. Overflow from the BMPs will discharge to existing storm drains on Camino De La Reina via proposed PVC. Drive aisle storm water will be treated by pervious pavement, which is proposed under the parking stalls along the east side of the property. This storm water will be discharged to existing 60" storm drains on Camino De La Reina. All BMPs are designed to hold more than 1.5 times the design capture volume (DCV).



Form I-3B Page 5 of 9
Identify whether any of the following features, activities, and/or pollutant source areas will be present (select
all that apply):
On-site storm drain inlets
☐ Interior floor drains and elevator shaft sump pumps
☐ Interior parking garages
Need for future indoor & structural pest control
☐ Landscape/Outdoor Pesticide Use
Pools, spas, ponds, decorative fountains, and other water features
∑ Food service
Refuse areas
☐ Industrial processes
Utdoor storage of equipment or materials
☐ Vehicle and Equipment Cleaning
☐ Vehicle/Equipment Repair and Maintenance
☐ Fuel Dispensing Areas
☐ Loading Docks
Fire Sprinkler Test Water
Miscellaneous Drain or Wash Water
☐ Plazas, sidewalks, and parking lots
Identification and Narrative of Receiving Water
Narrative describing flow path from discharge location(s), through urban storm conveyance system, to receiving creeks, rivers, and lagoons and ultimate discharge location to Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable)
The four discharge locations, as described previously, all outlet into existing storm drain systems on Camino De La Reina, which ultimately discharge to the San Diego River, eventually reaching the Pacific Ocean.
Provide a summary of all beneficial uses of receiving waters downstream of the project discharge locations.
Existing benefits include: Municipal and Domestic Supply, Agricultural, Industrial Service Supply, Contact Water Recreation, Non-Contact Water Recreation, Preservation of Biological Habitats of Special Significance, Warm Freshwater Habitat, Wildlife Habitat, Rare Threatened or Endangered Species
Identify all ASBS (areas of special biological significance) receiving waters downstream of the project discharge locations.
There are no ASBS for this project.
Provide distance from project outfall location to impaired or sensitive receiving waters.
150' from outfall to San Diego River



### Form I-3B Page 6 of 9

### Identification of Receiving Water Pollutants of Concern

List any 303(d) impaired water bodies within the path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable), identify the pollutant(s)/stressor(s) causing impairment, and identify any TMDLs and/or Highest Priority Pollutants from the WQIP for the impaired water bodies:

303(d) Impaired Water Body	Pollutant(s)/Stressor(s)	TMDLs/ WQIP Highest Priority Pollutant
	I	Enterococcus, Low Dissolved Oxygen, Nitrogen, Phosphorus, total Dissolved Solids, Toxicity

### Identification of Project Site Pollutants\*

\*Identification of project site pollutants is only required if flow-thru treatment BMPs are implemented onsite in lieu of retention or biofiltration BMPs (note the project must also participate in an alternative compliance program unless prior lawful approval to meet earlier PDP requirements is demonstrated)

Identify pollutants expected from the project site based on all proposed use(s) of the site (see BMP Design Manual Appendix B.6):

Pollutant	Not Applicable to the Project Site	Expected from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment			
Nutrients			
Heavy Metals			
Organic Compounds			
Trash & Debris			
Oxygen Demanding Substances			
Oil & Grease			
Bacteria & Viruses			
Pesticides			

Storm Water Standards Part 1: BMP Design Manual



Form I-3B Page 7 of 9
Hydromodification Management Requirements
Do hydromodification management requirements apply (see Section 1.6 of the BMP DesignManual)?  Yes, hydromodification management flow control structural BMPs required.  No, the project will discharge runoff directly to existing underground storm drains discharging directly to
water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete- lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
No, the project will discharge runoff directly to an area identified as appropriate for an exemption by the WMAA for the watershed in which the project resides.
Description / Additional Information (to be provided if a 'No' answer has been selected above):
Per the BMP Design Manual, Section 1.6, designated exempt river reaches include San Diego River downstream of confluence with San Vicente Creek. The existing conveyance system that the project will discharge to outlets directly to the San Diego River and is thus exempt. The outlets are also in elevations between the river bottom and 100 year flood plain. (See attached exhibits in the Attachment 2 for additional information).
Critical Coarse Sediment Yield Areas*  *This Section only required if hydromodification management requirements apply
Based on the maps provided within the WMAA, do potential critical coarse sediment yield areas exist within
the project drainage boundaries?
Yes No, No critical coarse sediment yield areas to be protected based on WMAA maps
If yes, have any of the optional analyses presented in Section 6.2 of the BMP Design Manual been performed?
6.2.1 Verification of Geomorphic Landscape Units (GLUs) Onsite
6.2.2 Downstream Systems Sensitivity to Coarse Sediment
6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
No optional analyses performed, the project will avoid critical coarse sediment yield areas identified based on WMAA maps
If optional analyses were performed, what is the final result?
<ul> <li>No critical coarse sediment yield areas to be protected based on verification of GLUs onsite</li> <li>□ Critical coarse sediment yield areas exist but additional analysis has determined that protection is not required. Documentation attached in Attachment 8 of the SWQMP.</li> <li>□ Critical coarse sediment yield areas exist and require protection. The project will implement management measures described in Sections 6.2.4 and 6.2.5 as applicable, and the areas are identified on the SWQMP Exhibit.</li> </ul>
Discussion / Additional Information:



# Form I-3B Page 8 of 9

### Flow Control for Post-Project Runoff\*

\*This Section only required if hydromodification management requirements apply

List and describe point(s) of compliance (POCs) for flow control for hydromodification management (see Section 6.3.1). For each POC, provide a POC identification name or number correlating to the project's HMP

Exhibit and a receiving channel identification name or number correlating to the project's HMP Exhibit.
N/A; Hydromodification not required for this project.
Has a geomorphic assessment been performed for the receiving channel(s)?  No, the low flow threshold is 0.1Q2 (default low flow threshold)
Yes, the result is the low flow threshold is 0.1Q2
$\square$ Yes, the result is the low flow threshold is $0.3Q2$
Yes, the result is the low flow threshold is 0.5Q2
If a geomorphic assessment has been performed, provide title, date, and preparer:
Discussion / Additional Information: (optional)



### Form I-3B Page 9 of 9

## Other Site Requirements and Constraints

When applicable, list other site requirements or constraints that will influence storm water management design, such as zoning requirements including setbacks and open space, or local codes governing minimum street width, sidewalk construction, allowable pavement types, and drainage requirements.

The 100 Year Flood Plain Limit extends into a portion of the site. A Letter of Map Revision (LOMR) will be processed during the construction permit phase. The required pad elevation is 40', which has been met.

Opt	ional Add	itional Ir	nformation o	r Cont	inuation	of P	revious	Sections	As No	eeded
-----	-----------	------------	--------------	--------	----------	------	---------	----------	-------	-------

This space provided for additional information or continuation of information from previous sections as needed.



	1 1.		
Source Control BMP Check		Form	T-4
for All Development Proj	ects	1 01111	<b>-</b> '
Project Identification			
Project Name: Alexan, Fashion Valley			
Permit Application Number:			
Source Control BMPs	1 00	· 1	1: 11 1
All development projects must implement source control BMPs SC-1 th feasible. See Chapter 4 and Appendix E of the BMP Design Manual for control BMPs shown in this checklist.			
Answer each category below pursuant to the following.			
<ul> <li>"Yes" means the project will implement the source control BMP Appendix E of the BMP Design Manual. Discussion / jus</li> </ul>			
<ul> <li>"No" means the BMP is applicable to the project but it is not fe justification must be provided.</li> </ul>	easible to in	nplement. I	Discussion /
<ul> <li>"N/A" means the BMP is not applicable at the project site because feature that is addressed by the BMP (e.g., the prostorage areas). Discussion / justification may be provided</li> </ul>	roject has		
Source Control Requirement		Applied:	
SC-1 Prevention of Illicit Discharges into the MS4	X Yes	No	□ N/A
Discussion / justification if SC-1 not implemented:			, ,
SC-2 Storm Drain Stenciling or Signage	X Yes	☐ No	□ N/A
Discussion / justification if SC-2 not implemented:			
SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	X Yes	□ No	□ N/A
Discussion / justification if SC-3 not implemented:	I	l.	•
SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	X Yes	□ No	□ N/A
Discussion / justification if SC-4 not implemented:			
SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	Xes	□ No	□ N/A
Discussion / justification if SC-4 not implemented:			



# Appendix A: Submittal Templates

Form I-4 Page 2 of 2	
Source Control Requirement	Applied?
	Applied?
□ Refuse areas □ Industrial processes □ Outdoor storage of equipment or materials □ Vehicle and Equipment Cleaning □ Vehicle/Equipment Repair and Maintenance □ Fuel Dispensing Areas □ Loading Docks □ Fire Sprinkler Test Water □ Miscellaneous Drain or Wash Water □ Plazas, sidewalks, and parking lots □ SC-6A: Large Trash Generating Facilities □ SC-6B: Animal Facilities □ SC-6C: Plant Nurseries and Garden Centers □ SC-6D: Automotive-related Uses	Yes       No       N/A         Yes       No       N/A
Discussion / justification if SC-6 not implemented. Clearly identify which discussed. Justification must be provided for all_"No" answers shown above.	*



# Site Design BMP Checklist Form I-5 for All Development Projects **Project Identification** Project Name: Alexan, Fashion Valley Permit Application Number: Site Design BMPs All development projects must implement site design BMPs SD-1 through SD-8 where applicable and feasible. See Chapter 4 and Appendix E of the BMP Design Manual for information to implement site design BMPs shown in this checklist. Answer each category below pursuant to the following. "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the BMP Design Manual. Discussion / justification is not required. "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided. "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project site has no existing natural areas to conserve). Discussion / justification may be provided. Site Design Requirement Applied? SD-1 Maintain Natural Drainage Pathways and Hydrologic Features $\prod$ No $\times$ N/A Yes Discussion / justification if SD-1 not implemented: SD-2 Conserve Natural Areas, Soils, and Vegetation $\prod$ No $\times N/A$ Yes Discussion / justification if SD-2 not implemented: SD-3 Minimize Impervious Area X Yes No N/A Discussion / justification if SD-3 not implemented: SD-4 Minimize Soil Compaction Yes No $\times$ N/A Discussion / justification if SD-4 not implemented:



# Appendix A: Submittal Templates

Form I-5 Page 2 of 2			
Site Design Requirement		Applied	l?
SD-5 Impervious Area Dispersion	X Yes	☐ No	□ N/A
Discussion / justification if SD-5 not implemented:			
SD-6 Runoff Collection	X Yes	No	□ N/A
Discussion / justification if SD-6 not implemented:			,
,			
SD-7 Landscaping with Native or Drought Tolerant Species	X Yes	No	N/A
Discussion / justification if SD-7 not implemented:	,	. —	, <u> </u>
SD-8 Harvesting and Using Precipitation	X Yes	□No	□ N/A
Discussion / justification if SD-8 not implemented:	<b>'</b>		· ·

### Summary of PDP Structural BMPs

Form I-6

### **Project Identification**

Project Name: Alexan, Fashion Valley

Permit Application Number:

### PDP Structural BMPs

All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the BMP Design Manual). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the BMP Design Manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s).

PDP structural BMPs must be verified by the City at the completion of construction. This includes requiring the project owner or project owner's representative to certify construction of the structural BMPs (complete Form DS-563). PDP structural BMPs must be maintained into perpetuity (see Chapter 7 of the BMP Design Manual).

Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).

Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the BMP Design Manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate.

Bio-filtration BMPs (BF-1) and Partial Retention BMPs (PR-1) will be utilized to treat storm water for this site. Five (5) bio-filtration units and eleven (11) partial retention BMPs are proposed to treat roof runoff and concrete areas, along with permeable pavement for drive aisle runoff.

Per worksheet I-8, Attachment 1, this site has been categorized to have the potential for partial infiltration and no infiltration conditions. Per the Geotechnical Investigation dated February 24, 2016 and per the "Field Percolation Testing Letter Report" dated June 7<sup>th</sup> 2016, infiltration rates are considered to be low to moderate, with the exception of one area (percolation test P-1 per Figure 1 of "Field Percolation Testing Letter Report"). This letter also states that infiltration is strongly discouraged in areas that fall within a 1:1 plane of the bottom of the building foundation. Furthermore, several areas have a grade of greater than 25% which are also not suitable for full infiltration per the BMP Design Manual, section C.2.3. Per a letter titled "Response to City of San Diego Cycle 8 LDR – Geology", an exhibit has been provided showing the limits of the partial infiltration and no infiltration zones.

Partial infiltration has been designed for DMAs 2, 3, 4, 5, 6, 10, 11, and 13. The existing percolation rates fall between 0.01 in/hr and 0.5 in/hr and no geologic hazards are deemed unsuitable for a partial infiltration condition.

No infiltration has been designed for DMAs 1, 7, and 12.

The remaining DMAs are exempt from DCV calculations because they are either self mitigating areas, de minimis areas, or are providing site design per the BMP Design Manual section 5.2. DMAs 9, 14, and 15



# Appendix A: Submittal Templates

Form I-6 Page 2 of X
(Page reserved for continuation of description of general strategy for structural BMP implementation at the site)
are self mitigating areas. DMA 16 and 17 are de minimis areas. And DMA 8 is applying site design through implementation of permeable pavement. The drive aisles will drain to the parking stalls, which are completely made of permeable material.



# Form I-6 Page 3 of X (Copy as many as needed) **Structural BMP Summary Information** (Copy this page as needed to provide information for each individual proposed structural BMP) Structural BMP ID No. Construction Plan Sheet No. Type of structural BMP: Retention by harvest and use (HU-1) Retention by infiltration basin (INF-1) Retention by bioretention (INF-2) Retention by permeable pavement (INF-3) Partial retention by biofiltration with partial retention (PR-1) Biofiltration (BF-1) Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) Detention pond or vault for hydromodification management Other (describe in discussion section below) Purpose: Pollutant control only Hydromodification control only Combined pollutant control and hydromodification control Pre-treatment/forebay for another structural BMP Other (describe in discussion section below) Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563 Who will be the final owner of this BMP? Who will maintain this BMP into perpetuity? What is the funding mechanism for maintenance?

Storm Water Standards Part 1: BMP Design Manual



# Appendix A: Submittal Templates

Form I-6 Page 4 of X (Copy as many as needed)
Structural BMP ID No.
Construction Plan Sheet No.
Discussion (as needed):





# Permanent BMP Construction

Self Certification Form

FORM DS-563

FEBRUARY 2013

Date Prepared:	Project No.:
Project Applicant:	Phone:
Project Address:	
Project Engineer:	Phone:
The purpose of this form is to ver structed in conformance with the a drawings.	fy that the site improvements for the project, identified above, have been coproved Standard Urban Storm Water Mitigation Plan (SUSMP) documents a
Completion and submittal of this comply with the City's Storm Water	the engineer and submitted prior to final inspection of the construction pernorm is required for all new development and redevelopment projects in order ordinances and NDPES Permit Order No. R9-2007-0001. Final inspection or public improvement bonds may be delayed if this form is not submitted a
CERTIFICATION: As the professional in responsible constructed Low Impact Developm	charge for the design of the above project, I certify that I have inspected ent (LID) site design, source control and treatment control BMP's required
the approved SUSMP and Constructed in compliance with the No. R9-2007-0001 of the San Diego	action Permit No. ; and that said BMP's have be approved plans and all applicable specifications, permits, ordinances and Ord Regional Water Quality Control Board.
I understand that this BMP certition.	cation statement does not constitute an operation and maintenance verifi
Signature:	
Date of Signature:	
Printed Name:	
Title:	
Phone No	
Clear Form	Engineer's Stamp
	mildings, a smulb

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Upon request, this information is available in alternative formats for persons with disabilities.

DS-563 (02-13)



# ATTACHMENT 1 BACKUP FOR PDP POLLUTANT CONTROL BMPS

This is the cover sheet for Attachment 1.



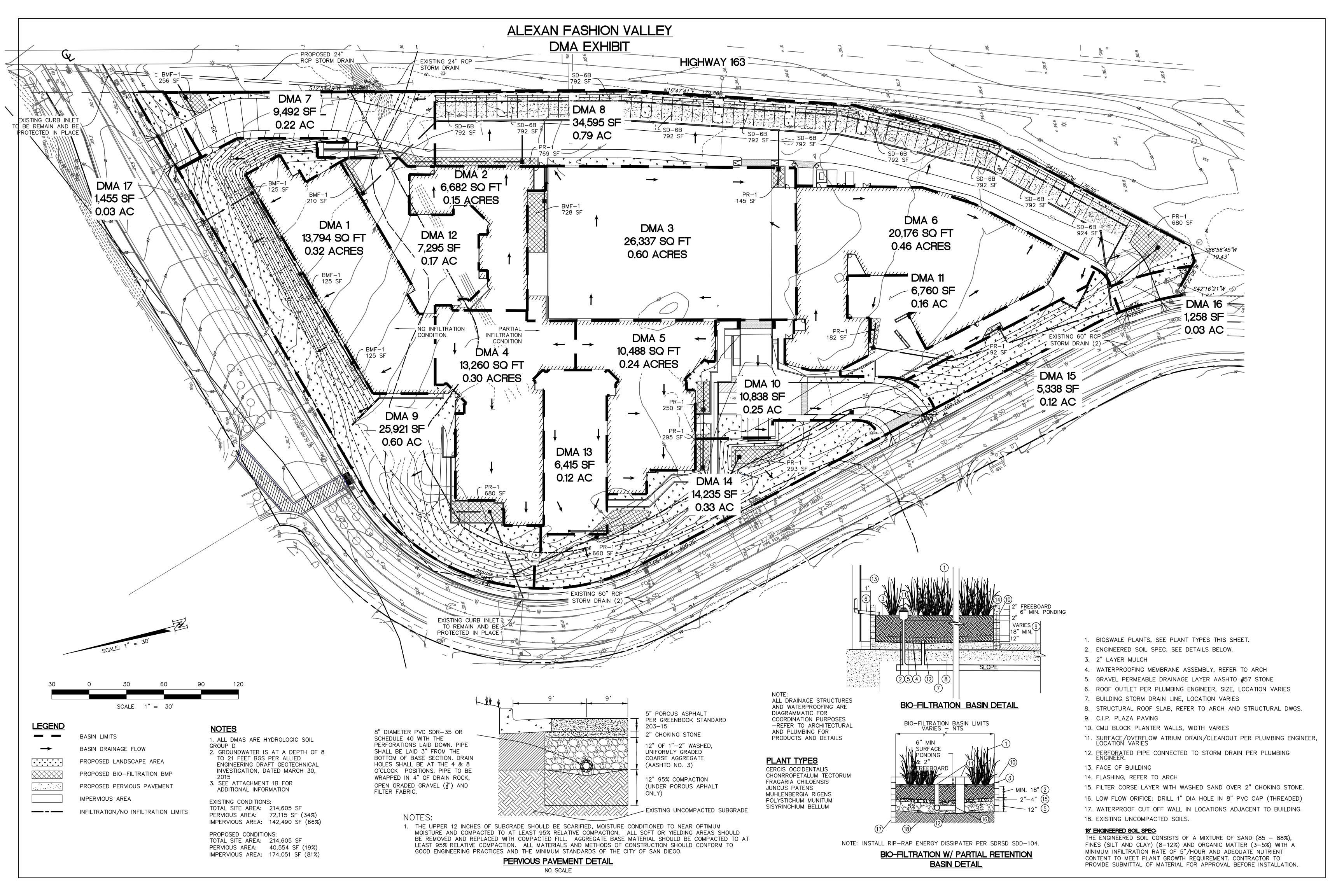
### Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 1a	DMA Exhibit (Required)  See DMA Exhibit Checklist.	
Attachment 1b	Tabular Summary of DMAs Showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)*  *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a	☐ Included on DMA Exhibit in Attachment 1a ☐ Included as Attachment 1b, separate from DMA Exhibit
Attachment 1c	Form I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs)  Refer to Appendix B.3-1 of the BMP Design Manual to complete Form I-7.	<ul> <li>✓ Included</li> <li>☐ Not included because the entire project will use infiltration BMPs</li> </ul>
Attachment 1d	Form I-8, Categorization of Infiltration Feasibility Condition (Required unless the project will use harvest and use BMPs)  Refer to Appendices C and D of the BMP Design Manual to complete Form I-8.	☐ Not included because the entire project will use harvest and use BMPs
Attachment 1e	Pollutant Control BMP Design Worksheets / Calculations (Required)  Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines	☑ Included

### Use this checklist to ensure the required information has been included on the DMAExhibit:

☑ Underlying hydrologic soil group
☑ Approximate depth to groundwater
☑ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
☐ Critical coarse sediment yield areas to be protected
☑ Existing topography and impervious areas
☑ Existing and proposed site drainage network and connections to drainage offsite
☑ Proposed grading
☑ Proposed impervious features
☑ Proposed design features and surface treatments used to minimize imperviousness
☑ Drainage management area (DMA) boundaries, DMA ID numbers, and DMA areas (square footage or acreage), and DMA type (i.e., drains to BMP, self-retaining, or self-mitigating)
☐ Potential pollutant source areas and corresponding required source controls (see Chapter 4, Appendix E.1, and Form I-3B)
☑ Structural BMPs (identify location, type of BMP, and size/detail)

The DMA Exhibit must identify:



DMA ID	,	Soil Group	Post-Project Surface Type From Table B.1-1	Post-Project Surface Runoff Factor From Table B.1-1		Un-Adjusted DCV (Ft^3)	DCV Reduction Through Site Design BMPs Applied? (Yes/No)	Site Design Adjusted	Retention BMPs Implemented	DCV Remaining after Retention BMPs Implemented (ft^3)	Biofiltration BMPs Implemented? (Yes/No)	DCV Remaining After Biofiltration BMPs Implemented (ft^3)	Offsite Alternative Compliance and Onsite Flow-Thru Treatment Control BMPs Required? (Yes/No)
1	13,794	D	Roofs	0.9	No	549	No	N/A	No	N/A	Yes	0	No
2	6,682	D	Roofs	0.9	No	257	No	N/A	Yes	0	No	0	No
3	26,337	D	Roofs	0.9	No	1030	No	N/A	Yes	172	No	109¹	No
4	13,260	D	Roofs	0.9	No	515	No	N/A	Yes	0	No	0	No
5	10,488	D	Roofs	0.9	No	412	No	N/A	Yes	0	No	0	No
6	20,176	D	Roofs	0.9	No	789	No	N/A	Yes	0	No	0	No
7	9,492	D	Concrete	0.9	No	377	No	N/A	No	N/A	Yes	0	No
8²	34,595	D	Concrete	0.9	Yes	N/A	Yes	0	No	N/A	Yes	0	No
9³	25,921	D	Landscape	0.1	Yes	N/A	No	N/A	No	N/A	No	0	No
10	10,838	D	Concrete	0.9	No	429	No	N/A	Yes	0	Yes	0	No
11	6,760	D	Concrete	0.9	No	275	No	N/A	Yes	0	Yes	0	No
12	7,295	D	Concrete	0.9	No	292	No	N/A	No	N/A	Yes	0	No
13	6,415	D	Concrete	0.5	No	143	No	N/A	Yes	0	No	0	No
14	14,235	D	Landscape	0.1	Yes	N/A	No	N/A	No	N/A	No	0	No
15	5,338	D	Landscape	0.1	Yes	N/A	No	N/A	No	N/A	No	0	No
16 <sup>4</sup>	1,258	D	Concrete	0.5	Yes	N/A	No	N/A	No	N/A	No	0	No
17 <sup>4</sup>	1,455	D	Concrete	0.5	Yes	N/A	No	N/A	No	N/A	No	0	No

#### Notes:

- 1. The remaining DCV will be treated by DMA 13 due to site limitations
  2. DMA is utilizing permeable pavement to qualify for DCV calculation exclusion
  3. DMA considered to be self mitigating area
  4. DMA considered to be de minimis area

### Harvest and Use Feasibility Checklist Form I-7 1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season? Toilet and urinal flushing ☐ Landscape irrigation Other:\_\_\_\_ 2. If there is a demand; estimate the anticipated average wet season demand over a period of 36 hours. Guidance for planning level demand calculations for toilet/urinal flushing and landscape irrigation is provided in Section B.3.2. Toilet Flushing: 744 Ft<sup>3</sup> Irrigation: 25.5 Ft<sup>3</sup> 3. Calculate the DCV using worksheet B-2.1. DCV = 6,593 (cubic feet) 3c. Is the 36 hour demand 3a. Is the 36 hour demand greater 3b. Is the 36 hour demand greater than than or equal to the DCV? 0.25DCV but less than the full DCV? less than 0.25DCV? $\square$ Yes / $\boxtimes$ No $\Longrightarrow$ Yes / No X Yes Harvest and use may be feasible. Harvest and use is Harvest and use appears to be feasible. Conduct more detailed Conduct more detailed evaluation and considered to be infeasible. evaluation and sizing calculations sizing calculations to determine to confirm that DCV can be used feasibility. Harvest and use may only be at an adequate rate to meet able to be used for a portion of the site, drawdown criteria. or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours. Is harvest and use feasible based on further evaluation? Yes, refer to Appendix E to select and size harvest and use BMPs. No, select alternate BMPs.

Form I-8

For

Partial Infiltration Areas

Categ	gorization of Infiltration Feasibility Condition	Forn	n I-8
Would i	Full Infiltration Feasibility Screening Criteria  nfiltration of the full design volume be feasible from a physical perspuences that cannot be reasonably mitigated?	ective without	any undesirable
Criteria	Screening Question	Yes	No
1	Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		х
	basis: on tests by Leighton and Associates, Inc., revealed infiltration rates withinches/hour with a factor of safety of 2 applied.	in the project sit	e were not higher
2	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X
Provide l	basis:	<u> </u>	
	on tests by Leighton and Associates, Inc., revealed infiltration rates within nches/hour with a factor of safety of 2 applied.	in the project sit	e were not higher

	Form I-8 Page 2 of 4		
Criteria	Screening Question	Yes	No
3	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide l	pasis:		
	n tests by Leighton and Associates, Inc., revealed infiltration rates within the ches/hour with a factor of safety of 2 applied.	n die project sin	e were not migner
4	Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide l			
	n tests by Leighton and Associates, Inc., revealed infiltration rates within a ches/hour with a factor of safety of 2 applied.	n the project site	e were not higher
Part 1	If all answers to rows 1 - 4 are "Yes" a full infiltration design is potentiall feasibility screening category is Full Infiltration	y feasible. The	
Result *	If any answer from row 1-4 is " <b>No</b> ", infiltration may be possible to some would not generally be feasible or desirable to achieve a "full infiltration" Proceed to Part 2		

\*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings

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### Part 2 - Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	Х	

Provide basis:

Percolation tests by Leighton and Associates, Inc., revealed infiltration rates were higher than 0.01 inches per hour within the project site.

	Can Infiltration in any appreciable quantity be allowed without		
	increasing risk of geotechnical hazards (slope stability,		
6	groundwater mounding, utilities, or other factors) that cannot	X	
Ü	be mitigated to an acceptable level? The response to this Screening		
	Question shall be based on a comprehensive evaluation of the factors		
	presented in Appendix C.2.		

Provide basis:

With the exception of a shallow groundwater table, percolation rates greater than 0.01 in/hr are feasible with given geotechnical conditions.

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Criteria	Screening Question	Yes	No
7	Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide ba	isis:		
	ant risks to groundwater related concerns within the limits shown in the and Associates, Inc. (Per letter titled "Response to City of San Diego Cyc		
8	Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide ba	isis:		
nfiltration	would not violate any downstream water rights, including but not limite	ed to CWA 401/40	4.
Part 2 Result*	If all answers from row 1-4 are yes then partial infiltration design is portable.  The feasibility screening category is <b>Partial Infiltration</b> .  If any answer from row 5-8 is no, then infiltration of any volume is <b>infeasible</b> within the drainage area. The feasibility screening category is I	considered to be	

<sup>\*</sup>To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings

Per Attachment 1A: DMAs 2, 3, 4, 5, 6, 10, 11, and 13 will be treated as partial infiltration condition.

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Form I-8

For

Non Infiltration Areas

Categ	gorization of Infiltration Feasibility Condition	Forn	n I-8
Would i	Full Infiltration Feasibility Screening Criteria  nfiltration of the full design volume be feasible from a physical perspuences that cannot be reasonably mitigated?	ective without	any undesirable
Criteria	Screening Question	Yes	No
1	Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		х
	basis: on tests by Leighton and Associates, Inc., revealed infiltration rates withinches/hour with a factor of safety of 2 applied.	in the project sit	e were not higher
2	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X
Provide l	basis:	<u> </u>	
	on tests by Leighton and Associates, Inc., revealed infiltration rates within nches/hour with a factor of safety of 2 applied.	in the project sit	e were not higher

	Form I-8 Page 2 of 4		
Criteria	Screening Question	Yes	No
3	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide l	pasis:		
	n tests by Leighton and Associates, Inc., revealed infiltration rates within the ches/hour with a factor of safety of 2 applied.	n die project sin	e were not migner
4	Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.		X
Provide l			
	n tests by Leighton and Associates, Inc., revealed infiltration rates within a ches/hour with a factor of safety of 2 applied.	n the project site	e were not higher
Part 1	If all answers to rows 1 - 4 are "Yes" a full infiltration design is potentiall feasibility screening category is Full Infiltration	y feasible. The	
Result *	If any answer from row 1-4 is " <b>No</b> ", infiltration may be possible to some would not generally be feasible or desirable to achieve a "full infiltration" Proceed to Part 2		

\*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings

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### Part 2 - Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	Х	

Provide basis:

Percolation tests by Leighton and Associates, Inc., revealed infiltration rates were higher than 0.01 inches per hour within the project site.

	0 7 771 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
	Can Infiltration in any appreciable quantity be allowed without		
	increasing risk of geotechnical hazards (slope stability,		
6	groundwater mounding, utilities, or other factors) that cannot	<b>X</b>	
Ü	be mitigated to an acceptable level? The response to this Screening		
	Question shall be based on a comprehensive evaluation of the factors		
	presented in Appendix C.2.		

Provide basis:

With the exception of a shallow groundwater table, percolation rates greater than 0.01 in/hr are feasible with given geotechnical conditions.

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depths up to 8' in 1 area of the project site. The City of San Diego BMP Design Manual, section C.3.2., states the 'the depth to seasonally high groundwater tables (normal high depth during the wet season) beneath the base of a infiltration BMP must be greater than 10 feet for infiltration BMPs to be allowed."  The percolation map provided in the letter titled "Response to City of San Diego Cycle 9 LDR – Geology" show limits in which the groundwater depths are too shallow for infiltration.   Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.  Provide basis:  Infiltration would not violate any downstream water rights, including but not limited to CWA 401/404.  If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration.	Form I-8 Page 4 of 4						
posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.  Provide basis:  Per the Draft Geotechnical Investigation by Leighton and Associates, Inc., groundwater depths were found to be depths up to 8° in 1 area of the project site. The City of San Diego BMP Design Manual, section C.3.2., states th "the depth to seasonally high groundwater tables (normal high depth during the wet season) beneath the base of a infiltration BMP must be greater than 10 feet for infiltration BMPs to be allowed."  The percolation map provided in the letter titled "Response to City of San Diego Cycle 9 LDR – Geology" show limits in which the groundwater depths are too shallow for infiltration.  8	Criteria	Screening Question	Yes	No			
Per the Draft Geotechnical Investigation by Leighton and Associates, Inc., groundwater depths were found to be depths up to 8' in 1 area of the project site. The City of San Diego BMP Design Manual, section C.3.2., states th "the depth to seasonally high groundwater tables (normal high depth during the wet season) beneath the base of a infiltration BMP must be greater than 10 feet for infiltration BMPs to be allowed."  The percolation map provided in the letter titled "Response to City of San Diego Cycle 9 LDR – Geology" show limits in which the groundwater depths are too shallow for infiltration.  8	7	posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a		X			
depths up to 8' in 1 area of the project site. The City of San Diego BMP Design Manual, section C.3.2., states the 'the depth to seasonally high groundwater tables (normal high depth during the wet season) beneath the base of a infiltration BMP must be greater than 10 feet for infiltration BMPs to be allowed."  The percolation map provided in the letter titled "Response to City of San Diego Cycle 9 LDR – Geology" show limits in which the groundwater depths are too shallow for infiltration.   Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.  Provide basis:  Infiltration would not violate any downstream water rights, including but not limited to CWA 401/404.  If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration.	Provide ba	usis:					
rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.  Provide basis:  Infiltration would not violate any downstream water rights, including but not limited to CWA 401/404.  If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration.	depths up to "the depth tinfiltration"  The percola	The percolation map provided in the letter titled "Response to City of San Diego Cycle 9 LDR – Geology" shows the					
Infiltration would not violate any downstream water rights, including but not limited to CWA 401/404.  If all answers from row 1-4 are yes then partial infiltration design is potentially feasible.  The feasibility screening category is Partial Infiltration.	8	rights? The response to this Screening Question shall be based on a	X				
Part 2 The feasibility screening category is Partial Infiltration.							
Part 2 The feasibility screening category is Partial Infiltration.							
Result*  If any answer from row 5-8 is no, then infiltration of any volume is considered to be infeasible within the drainage area. The feasibility screening category is <b>No Infiltration</b> .	Part 2 Result*						

<sup>\*</sup>To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings

Per Attachment 1A: DMAs 1, 7, and 12 will be treated as no infiltration condition.

Worksheet B.2-1 DCV (DMA 1)

Design Capture Volume		Worksheet B.2-1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.525	inches
2	Area tributary to BMP (s)	A=	0.32	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.90	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$	DCV=	549	cubic-feet



Worksheet B.2-1 DCV (DMA 2)

Design Capture Volume		Worksheet B.2-1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.525	inches
2	Area tributary to BMP (s)	A=	0.15	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.90	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$	DCV=	257	cubic-feet



Worksheet B.2-1 DCV (DMA 3)

Design Capture Volume		Worksheet B.2-1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.525	inches
2	Area tributary to BMP (s)	A=	0.60	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.90	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$	DCV=	1030	cubic-feet



Worksheet B.2-1 DCV (DMA 4)

Design Capture Volume		Worksheet B.2-1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.525	inches
2	Area tributary to BMP (s)	A=	0.30	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.90	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$	DCV=	515	cubic-feet



Worksheet B.2-1 DCV (DMA 5)

Design Capture Volume Worksheet B.2-1				
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.525	inches
2	Area tributary to BMP (s)	A=	0.24	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.90	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$	DCV=	412	cubic-feet



Worksheet B.2-1 DCV (DMA 6)

Design Capture Volume Worksheet B.2-1				
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.525	inches
2	Area tributary to BMP (s)	A=	0.46	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.90	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$	DCV=	789	cubic-feet

Worksheet B.2-1 DCV (DMA 8)

Design Capture Volume Worksheet B.2-1				
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.525	inches
2	Area tributary to BMP (s)	A=	0.79	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.42	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$	DCV=	632	cubic-feet



Worksheet B.2-1 DCV (DMA 7)

Design Capture Volume Worksheet B.2-1				
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.525	inches
2	Area tributary to BMP (s)	A=	0.22	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.90	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$	DCV=	377	cubic-feet



Worksheet B.2-1 DCV (DMA 8)

Design Capture Volume Worksheet B.2-1				
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.525	inches
2	Area tributary to BMP (s)	A=	0.79	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.42	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$	DCV=	632	cubic-feet



Worksheet B.2-1 DCV (DMA 10)

Design Capture Volume Worksheet B.2-1				
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.525	inches
2	Area tributary to BMP (s)	A=	0.25	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.90	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$	DCV=	429	cubic-feet



Worksheet B.2-1 DCV (DMA 11)

Design Capture Volume Worksheet B.2-1				
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.525	inches
2	Area tributary to BMP (s)	A=	0.16	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.90	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$	DCV=	275	cubic-feet



Worksheet B.2-1 DCV (DMA 12)

D	esign Capture Volume	Worksheet B.2-1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.525	inches
2	Area tributary to BMP (s)	A=	0.17	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.90	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$	DCV=	292	cubic-feet

Worksheet B.2-1 DCV (DMA 13)

Design Capture Volume Worksheet B.2-1				
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.525	inches
2	Area tributary to BMP (s)	A=	0.12	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.90	unitless
4	Trees Credit Volume	TCV=	0	cubic-feet
5	Rain barrels Credit Volume	RCV=	0	cubic-feet
6	Calculate DCV = $(3630 \times C \times d \times A) - TCV - RCV$	DCV=	206	cubic-feet

Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (DMA 1)

	Simple Sizing Method for Biofiltration BMPs Workshe	et B.5-1 (Pa	ge 1 of 2)
1	Remaining DCV after implementing retention BMPs	549	cubic- feet
Par	tial Retention		
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	N/A	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	0	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	N/A	inches
7	Assumed surface area of the biofiltration BMP	375	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	0.40	cubic-
9	Volume retained by Divir [[Line 4 + (Line 12 x Line 6)]/ 12] x Line /	343	feet
10	DCV that requires biofiltration [Line 1 – Line 9]	206	cubic- feet
BM	P Parameters		
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	5	in/hr.
Bas	eline Calculations		
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	15	inches
19	Total Depth Treated [Line 17 + Line 18]	45	inches



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (continued)

	Simple Sizing Method for Biofiltration BMPs Worksheet B.5-1 (Page 2 of 2)				
Op	tion 1 – Biofilter 1.5 times the DCV				
20	Required biofiltered volume [1.5 x Line 10]	309	cubic- feet		
21	Required Footprint [Line 20/ Line 19] x 12	83	sq-ft		
Op	Option 2 - Store 0.75 of remaining DCV in pores and ponding				
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	155	cubic- feet		
23	Required Footprint [Line 22/ Line 18] x 12	124	sq-ft		
Foo	otprint of the BMP				
24	Area draining to the BMP	13,794	sq-ft		
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.9			
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03			
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	372	sq-ft		
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	372	sq-ft		
Che	eck for Volume Reduction [Not applicable for No Infiltration Con	ndition]			
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	N/A	unitless		
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless		
31	Is the retained DCV $\geq$ 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	Yes	□ No		

- 1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
- 2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
- 3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
- 4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (DMA 2)

	Simple Sizing Method for Biofiltration BMPs   Workshee	et B.5-1 (Pa	
1	Remaining DCV after implementing retention BMPs	257	cubic- feet
Par	tial Retention		
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.048	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	1.73	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	4.33	inches
7	Assumed surface area of the biofiltration BMP	330	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by RMD [II in a 4 + /Line 12 v. Line 9\] /12] v. Line 7	_	cubic-
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	97	feet
10	DCV that requires biofiltration [Line 1 – Line 9]	160	cubic- feet
BM	P Parameters		
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	5	in/hr.
Bas	eline Calculations		
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	15	inches
19	Total Depth Treated [Line 17 + Line 18]	45	inches



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (continued)

	Simple Sizing Method for Biofiltration BMPs Worksheet B.5-1 (Page 2 of 2)				
Op	Option 1 – Biofilter 1.5 times the DCV				
20	Required biofiltered volume [1.5 x Line 10]	240	cubic- feet		
21	Required Footprint [Line 20/ Line 19] x 12	64	sq-ft		
Op	tion 2 - Store 0.75 of remaining DCV in pores and ponding				
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	120	cubic- feet		
23	Required Footprint [Line 22/ Line 18] x 12	96	sq-ft		
Foo	otprint of the BMP				
24	Area draining to the BMP	6,682	sq-ft		
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.9			
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03			
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	180	sq-ft		
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	180	sq-ft		
Che	eck for Volume Reduction [Not applicable for No Infiltration Cor	dition]			
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	0.375	unitless		
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless		
31	Is the retained DCV $\geq$ 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	₹Yes	□ No		

- 1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
- 2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
- 3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
- 4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (DMA 3)

	Simple Sizing Method for Biofiltration BMPs Workshe	et B.5-1 (Pa	,
1	Remaining DCV after implementing retention BMPs	1030	cubic- feet
Par	tial Retention		
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.048	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	1.73	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	4.33	inches
7	Assumed surface area of the biofiltration BMP	584	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	470	cubic-
9	Volume retained by Divir [[Eine 4 + (Eine 12 x Eine 6)]/ 12] x Eine /	172	feet
10	DCV that requires biofiltration [Line 1 – Line 9]	858	cubic- feet
BM	IP Parameters		
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	5	in/hr.
Bas	seline Calculations		
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	15	inches
19	Total Depth Treated [Line 17 + Line 18]	45	inches



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (continued)

	Simple Sizing Method for Biofiltration BMPs Worksheet B.5-1 (Page 2 of 2)				
Op	Option 1 – Biofilter 1.5 times the DCV				
20	Required biofiltered volume [1.5 x Line 10]	1287	cubic- feet		
21	Required Footprint [Line 20/ Line 19] x 12	343	sq-ft		
Op	tion 2 - Store 0.75 of remaining DCV in pores and ponding				
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	644	cubic- feet		
23	Required Footprint [Line 22/ Line 18] x 12	515	sq-ft		
Foo	otprint of the BMP				
24	Area draining to the BMP	26,337	sq-ft		
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.9			
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03			
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	711	sq-ft		
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	711	sq-ft		
Che	eck for Volume Reduction [Not applicable for No Infiltration Cor	ndition]			
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	.167	unitless		
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless		
31 Note:	Is the retained DCV $\geq$ 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	□Yes	No		

#### Note:

- 1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
- 2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
- 3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
- 4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.

The storm water from this DMA is treated by two (2) Partially Retaining Biofiltration BMPs and one (1) Biofiltration BMP. Due to the nature of the site layout, this DMA will not be able to meet the 0.375 reduction in DCV. DMA 13 has excess capacity and will accommodate the remaining shortage in DCV from DMA 3.



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (DMA 3)

	Simple Sizing Method for Biofiltration BMPs Workshee	et B.5-1 (Pa	,
1	Remaining DCV after implementing retention BMPs	1030	cubic- feet
Par	tial Retention		
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	N/A	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	0	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	N/A	inches
7	Assumed surface area of the biofiltration BMP	728	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	400	cubic-
9	Volume retained by Divir [[Line 4 + (Line 12 x Line 6)]/ 12] x Line /	109	feet
10	DCV that requires biofiltration [Line 1 – Line 9]	921	cubic- feet
BM	P Parameters		
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	5	in/hr.
Bas	eline Calculations		
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	15	inches
19	Total Depth Treated [Line 17 + Line 18]	45	inches



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (continued)

	Simple Sizing Method for Biofiltration BMPs Worksheet B.5-1 (Page 2 o 2)				
Op	Option 1 – Biofilter 1.5 times the DCV				
20	Required biofiltered volume [1.5 x Line 10]	1382	cubic- feet		
21	Required Footprint [Line 20/ Line 19] x 12	368	sq-ft		
Op	tion 2 - Store 0.75 of remaining DCV in pores and ponding				
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	691	cubic- feet		
23	Required Footprint [Line 22/ Line 18] x 12	553	sq-ft		
Foo	otprint of the BMP				
24	Area draining to the BMP	26,337	sq-ft		
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.9			
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03			
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	711	sq-ft		
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	711	sq-ft		
Che	eck for Volume Reduction [Not applicable for No Infiltration Cor	dition]			
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	.106	unitless		
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless		
31	Is the retained DCV $\geq$ 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	□Yes	No		

#### Note:

- 1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
- 2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
- 3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
- 4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.

The storm water from this DMA is treated by two (2) Partially Retaining Biofiltration BMPs and one (1) Biofiltration BMP. Due to the nature of the site layout, this DMA will not be able to meet the 0.375 reduction in DCV. DMA 13 has excess capacity and will accommodate the remaining shortage in DCV from DMA 3.



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (DMA 4)

	Simple Sizing Method for Biofiltration BMPs Workshe	et B.5-1 (Pa	ge 1 of 2)
1	Remaining DCV after implementing retention BMPs	515	cubic- feet
Par	tial Retention		
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.045	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	1.62	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	4.05	inches
7	Assumed surface area of the biofiltration BMP	677	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	400	cubic-
)	Volume retained by Divir [[Line 4 + (Line 12 x Line 6)]/ 12] x Line /	193	feet
10	DCV that requires biofiltration [Line 1 – Line 9]	322	cubic- feet
BM	P Parameters		
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	5	in/hr.
Bas	eline Calculations		
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	15	inches
19	Total Depth Treated [Line 17 + Line 18]	45	inches



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (continued)

	Simple Sizing Method for Biofiltration BMPs  Worksheet B.5-1 (Page 2 of 2)				
Op	Option 1 – Biofilter 1.5 times the DCV				
20	Required biofiltered volume [1.5 x Line 10]	483	cubic- feet		
21	Required Footprint [Line 20/ Line 19] x 12	129	sq-ft		
Op	tion 2 - Store 0.75 of remaining DCV in pores and ponding				
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	175	cubic- feet		
23	Required Footprint [Line 22/ Line 18] x 12	193	sq-ft		
Foo	otprint of the BMP				
24	Area draining to the BMP	13,260	sq-ft		
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.9			
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03			
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	358	sq-ft		
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	358	sq-ft		
Che	eck for Volume Reduction [Not applicable for No Infiltration Con	ndition]			
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	0.375	unitless		
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless		
31	Is the retained DCV $\geq$ 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	Yes	□ No		

- 1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
- 2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
- 3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
- 4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (DMA 5)

	Simple Sizing Method for Biofiltration BMPs Workshe	et B.5-1 (Pa	ge 1 of 2)
1	Remaining DCV after implementing retention BMPs	412	cubic- feet
Par	tial Retention		
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.045	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	1.62	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	4.05	inches
7	Assumed surface area of the biofiltration BMP	544	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by RMD III inc. 4 ± (Line 12 v. Line 9)] /12] v. Line 7	155	cubic-
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	155	feet
10	DCV that requires biofiltration [Line 1 – Line 9]	257	cubic- feet
BM	P Parameters		
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	5	in/hr.
Bas	eline Calculations		
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	15	inches
19	Total Depth Treated [Line 17 + Line 18]	45	inches



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (continued)

	Simple Sizing Method for Biofiltration BMPs Worksheet B.5-1 (Page 2 of 2)				
Op	tion 1 – Biofilter 1.5 times the DCV				
20	Required biofiltered volume [1.5 x Line 10]	386	cubic- feet		
21	Required Footprint [Line 20/ Line 19] x 12	103	sq-ft		
Op	tion 2 - Store 0.75 of remaining DCV in pores and ponding				
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	193	cubic- feet		
23	Required Footprint [Line 22/ Line 18] x 12	154	sq-ft		
Foo	otprint of the BMP				
24	Area draining to the BMP	10,488	sq-ft		
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.9			
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03			
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	283	sq-ft		
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	283	sq-ft		
Che	eck for Volume Reduction [Not applicable for No Infiltration Con	ndition]			
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	0.375	unitless		
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless		
31	Is the retained DCV $\geq$ 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	₹Yes	□ No		

- 1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
- 2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
- 3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
- 4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (DMA 6)

	Simple Sizing Method for Biofiltration BMPs Workshe	et B.5-1 (Pa	ge 1 of 2)
1	Remaining DCV after implementing retention BMPs	789	cubic- feet
Par	tial Retention		
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.095	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	3.42	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	8.55	inches
7	Assumed surface area of the biofiltration BMP	680	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	2000	cubic-
9	Volume retained by Divir [[Line 4 + (Line 12 x Line 6)]/ 12] x Line /	296	feet
10	DCV that requires biofiltration [Line 1 – Line 9]	493	cubic- feet
BM	IP Parameters		
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	5	in/hr.
Bas	seline Calculations		
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	15	inches
19	Total Depth Treated [Line 17 + Line 18]	45	inches



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (continued)

	Simple Sizing Method for Biofiltration BMPs Worksheet B.5-1 (Page 2 of 2)				
Op	Option 1 – Biofilter 1.5 times the DCV				
20	Required biofiltered volume [1.5 x Line 10]	740	cubic- feet		
21	Required Footprint [Line 20/ Line 19] x 12	197	sq-ft		
Op	tion 2 - Store 0.75 of remaining DCV in pores and ponding				
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	370	cubic- feet		
23	Required Footprint [Line 22/ Line 18] x 12	296	sq-ft		
Foo	otprint of the BMP				
24	Area draining to the BMP	20,176	sq-ft		
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.9			
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03			
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	545	sq-ft		
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	545	sq-ft		
Che	eck for Volume Reduction [Not applicable for No Infiltration Con	ndition]			
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	0.375	unitless		
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless		
31 Note:	Is the retained DCV $\geq$ 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	₹Yes	□ No		

- 1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
- 2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
- 3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
- 4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (DMA 7)

	Simple Sizing Method for Biofiltration BMPs Workshee	et B.5-1 (Pa	age 1 of 2)
1	Remaining DCV after implementing retention BMPs	377	cubic- feet
Par	tial Retention		
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	N/A	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	0	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	N/A	inches
7	Assumed surface area of the biofiltration BMP	256	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	4.44	cubic-
9	Volume retained by Divir [[Line 4 + (Line 12 x Line 6)]/ 12] x Line /	141	feet
10	DCV that requires biofiltration [Line 1 – Line 9]	236	cubic- feet
BM	P Parameters		
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	5	in/hr.
Bas	eline Calculations		
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	15	inches
19	Total Depth Treated [Line 17 + Line 18]	45	inches



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (continued)

	Simple Sizing Method for Biofiltration BMPs Worksl	neet B.5-1 (l 2)	Page 2 of
Op	tion 1 – Biofilter 1.5 times the DCV		
20	Required biofiltered volume [1.5 x Line 10]	508.5	cubic- feet
21	Required Footprint [Line 20/ Line 19] x 12	136	sq-ft
Op	tion 2 - Store 0.75 of remaining DCV in pores and ponding		
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	254	cubic- feet
23	Required Footprint [Line 22/ Line 18] x 12	203	sq-ft
Foo	otprint of the BMP		
24	Area draining to the BMP	9,492	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.9	
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	256	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	256	sq-ft
Che	eck for Volume Reduction [Not applicable for No Infiltration Con	ndition]	
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	0.375	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless
31	Is the retained DCV $\geq$ 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	Yes	□No

- 1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
- 2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
- 3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
- 4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (DMA 10)

	Simple Sizing Method for Biofiltration BMPs   Workshee	et B.5-1 (Pa	nge 1 of 2)
1	Remaining DCV after implementing retention BMPs	429	cubic- feet
Par	tial Retention		
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.21	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	7.56	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	18.9	inches
7	Assumed surface area of the biofiltration BMP	293	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	000	cubic-
9	Volume retained by Divir [[Line 4 + (Line 12 x Line 6)]/ 12] x Line /	229	feet
10	DCV that requires biofiltration [Line 1 – Line 9]	200	cubic- feet
BM	IP Parameters		
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	5	in/hr.
Bas	seline Calculations		
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	15	inches
19	Total Depth Treated [Line 17 + Line 18]	45	inches



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (continued)

	Simple Sizing Method for Biofiltration BMPs Worksl	neet B.5-1 (l 2)	Page 2 of
Op	tion 1 – Biofilter 1.5 times the DCV		
20	Required biofiltered volume [1.5 x Line 10]	300	cubic- feet
21	Required Footprint [Line 20/ Line 19] x 12	80	sq-ft
Op	tion 2 - Store 0.75 of remaining DCV in pores and ponding		
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	225	cubic- feet
23	Required Footprint [Line 22/ Line 18] x 12	180	sq-ft
Foo	otprint of the BMP		
24	Area draining to the BMP	10,838	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.9	
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	293	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	293	sq-ft
Che	eck for Volume Reduction [Not applicable for No Infiltration Con	ndition]	
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	0.534	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless
31	Is the retained DCV $\geq$ 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	Yes	□ No

- 1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
- 2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
- 3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
- 4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (DMA 11)

	Simple Sizing Method for Biofiltration BMPs Workshee	et B.5-1 (Pa	age 1 of 2)
1	Remaining DCV after implementing retention BMPs	275	cubic- feet
Par	tial Retention		
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.21	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	7.56	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	18.9	inches
7	Assumed surface area of the biofiltration BMP	274	sq-ft
8	Media retained pore storage	0.1	in/in
9	V-1		cubic-
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	214	feet
10	DCV that requires biofiltration [Line 1 – Line 9]	61	cubic- feet
BM	IP Parameters		
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	5	in/hr.
Bas	seline Calculations		
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	15	inches
19	Total Depth Treated [Line 17 + Line 18]	45	inches



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (continued)

	Simple Sizing Method for Biofiltration BMPs Worksh	neet B.5-1 (l 2)	Page 2 of
Op	tion 1 – Biofilter 1.5 times the DCV		
20	Required biofiltered volume [1.5 x Line 10]	92	cubic- feet
21	Required Footprint [Line 20/ Line 19] x 12	25	sq-ft
Op	tion 2 - Store 0.75 of remaining DCV in pores and ponding		
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	161	cubic- feet
23	Required Footprint [Line 22/ Line 18] x 12	37	sq-ft
Foo	otprint of the BMP		
24	Area draining to the BMP	6,760	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.9	
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	183	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	183	sq-ft
Che	eck for Volume Reduction [Not applicable for No Infiltration Cor	ndition]	
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	0.778	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless
31	Is the retained DCV $\geq$ 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	Yes	□ No

- 1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
- 2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
- 3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
- 4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (DMA 12)

	Simple Sizing Method for Biofiltration BMPs Workshee	et B.5-1 (Pa	age 1 of 2)
1	Remaining DCV after implementing retention BMPs	292	cubic- feet
Par	tial Retention		
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	N/A	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	0	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	N/A	inches
7	Assumed surface area of the biofiltration BMP	733	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	110	cubic-
9	Volume retained by Divir [[Line 4 + (Line 12 x Line 6)]/ 12] x Line /	110	feet
10	DCV that requires biofiltration [Line 1 – Line 9]	182	cubic- feet
BM	P Parameters		
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	5	in/hr.
Bas	eline Calculations		
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	15	inches
19	Total Depth Treated [Line 17 + Line 18]	45	inches



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (continued)

	Simple Sizing Method for Biofiltration BMPs Worksh	neet B.5-1 (l 2)	Page 2 of
Op	tion 1 – Biofilter 1.5 times the DCV		
20	Required biofiltered volume [1.5 x Line 10]	273	cubic- feet
21	Required Footprint [Line 20/ Line 19] x 12	73	sq-ft
Op	tion 2 - Store 0.75 of remaining DCV in pores and ponding		
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	137	cubic- feet
23	Required Footprint [Line 22/ Line 18] x 12	110	sq-ft
Foo	otprint of the BMP		
24	Area draining to the BMP	7,295	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.9	
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	197	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	197	sq-ft
Che	eck for Volume Reduction [Not applicable for No Infiltration Cor	ndition]	
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	0.375	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless
31	Is the retained DCV $\geq$ 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	Yes	□ No

- 1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
- 2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
- 3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
- 4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (DMA 13)

	Simple Sizing Method for Biofiltration BMPs Workshee	et B.5-1 (Pa	age 1 of 2)
1	Remaining DCV after implementing retention BMPs	206	cubic- feet
Par	tial Retention		
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	0.045	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	1.62	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	4.05	inches
7	Assumed surface area of the biofiltration BMP	630	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	400	cubic-
9	Volume retained by Divir [[Line 4 + (Line 12 x Line 6)]/ 12] x Line /	180	feet
10	DCV that requires biofiltration [Line 1 – Line 9]	26	cubic- feet
BM	IP Parameters		
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	18	inches
14	Freely drained pore storage	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate which will be less than 5 in/hr.)	5	in/hr.
Bas	seline Calculations		
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	15	inches
19	Total Depth Treated [Line 17 + Line 18]	45	inches



Worksheet B.5-1: Simple Sizing Method for Biofiltration BMPs (continued)

	Simple Sizing Method for Biofiltration BMPs Worksl	neet B.5-1 (1 2)	Page 2 of
Op	tion 1 – Biofilter 1.5 times the DCV		
20	Required biofiltered volume [1.5 x Line 10]	39	cubic- feet
21	Required Footprint [Line 20/ Line 19] x 12	16	sq-ft
Op	tion 2 - Store 0.75 of remaining DCV in pores and ponding		
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	20	cubic- feet
23	Required Footprint [Line 22/ Line 18] x 12	16	sq-ft
Foo	otprint of the BMP		
24	Area draining to the BMP	5,060	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.9	
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	136	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	136	sq-ft
Che	eck for Volume Reduction [Not applicable for No Infiltration Con	ndition]	
29	Calculate the fraction of DCV retained in the BMP [Line 9/Line 1]	0.874	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless
31	Is the retained DCV $\geq$ 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	Yes	□ No

#### Note:

- 1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
- 2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
- 3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
- 4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.

The Biofiltration BMP in this DMA was sized to accommodate the shortage in DCV from DMA 2.



### Appendix D: Approved Infiltration Rate Assessment Methods

Worksheet D.5-1: Factor of Safety and Design Infiltration Rate Worksheet

Fact	Factor of Safety and Design Infiltration Rate Worksheet Worksheet D.5-1					
Factor Category		Factor Description	Assigned Weight (w)		Factor Value (v)	$\begin{array}{c} Product (p) \\ p = w \times v \end{array}$
		Soil assessment methods	0.25		2	0.5
		Predominant soil texture	0.25		2	0.5
Α	Suitability	Site soil variability	0.25		2	0.5
11	Assessment	Depth to groundwater / impervious layer	0.25		2	0.5
		Suitability Assessment Safety Factor, $S_A = \Sigma_p$				2
	Design	Level of pretreatment/ expected sediment loads	0.5		2	1
В		Redundancy/resiliency	0.25		2	0.5
		Compaction during construction	0.25		2	0.5
		Design Safety Factor, $S_B = \Sigma p$				2
Com	Combined Safety Factor, $S_{\text{total}} = S_A \times S_B$					4
	Observed Infiltration Rate, inch/hr, K <sub>observed</sub> (corrected for test-specific bias)			).19		
Desig	gn Infiltration Rat	e, in/hr, $K_{design} = K_{observed} / S_{total}$			(	).048

### Supporting Data

Briefly describe infiltration test and provide reference to test forms:

Leighton and Associates Inc took infiltration samples per report "Field Percolation Testing Letter Report" in Attachment 6. The observed infiltration rate per this DMA is nearest to P-3 per Table 1 and Figure 2.



Worksheet D.5-1: Factor of Safety and Design Infiltration Rate Worksheet

Fact	Factor of Safety and Design Infiltration Rate Worksheet Worksheet D.5-1					
Factor Category		Factor Description	Assigned Weight (w)		Factor Value (v)	$\begin{array}{c} Product (p) \\ p = w \times v \end{array}$
		Soil assessment methods	0.25		2	0.5
		Predominant soil texture	0.25		2	0.5
Α	Suitability	Site soil variability	0.25		2	0.5
11	Assessment	Depth to groundwater / impervious layer	0.25		2	0.5
		Suitability Assessment Safety Factor, S		2		
	Design	Level of pretreatment/ expected sediment loads	0.5		2	1
В		Redundancy/resiliency	0.25		2	0.5
		Compaction during construction	0.25		2	0.5
		Design Safety Factor, $S_B = \Sigma p$				2
Com	bined Safety Facto	or, $S_{\text{total}} = S_A \times S_B$				4
	Observed Infiltration Rate, inch/hr, K <sub>observed</sub> (corrected for test-specific bias)			).19		
Desig	gn Infiltration Rat	e, in/hr, $K_{design} = K_{observed} / S_{total}$			(	).048

### Supporting Data

Briefly describe infiltration test and provide reference to test forms:

Leighton and Associates Inc took infiltration samples per report "Field Percolation Testing Letter Report" in Attachment 6. The observed infiltration rate per this DMA is nearest to P-3 per Table 1 and Figure 2.



### Appendix D: Approved Infiltration Rate Assessment Methods

Worksheet D.5-1: Factor of Safety and Design Infiltration Rate Worksheet

Fact	or of Safety and	Design Infiltration Rate Worksheet		Worksl	neet D.5-1	
Factor Category		Factor Description	Assigned Weight (w)		Factor Value (v)	$\begin{array}{c} Product (p) \\ p = w \times v \end{array}$
		Soil assessment methods	0.25		2	0.5
		Predominant soil texture	0.25		2	0.5
Α	Suitability	Site soil variability	0.25		2	0.5
11	Assessment	Depth to groundwater / impervious layer	0.25		2	0.5
		Suitability Assessment Safety Factor, S		2		
	Design	Level of pretreatment/ expected sediment loads	0.5		2	1
В		Redundancy/resiliency	0.25		2	0.5
		Compaction during construction	0.25		2	0.5
		Design Safety Factor, $S_B = \Sigma p$				2
Com	Combined Safety Factor, $S_{total} = S_A \times S_B$				4	
	Observed Infiltration Rate, inch/hr, K <sub>observed</sub> (corrected for test-specific bias)				).18	
Desig	gn Infiltration Rat	e, in/hr, $K_{design} = K_{observed} / S_{total}$			(	).045

## Supporting Data

Briefly describe infiltration test and provide reference to test forms:

Leighton and Associates Inc took infiltration samples per report "Field Percolation Testing Letter Report" in Attachment 6. The observed infiltration rate per this DMA is nearest to P-4 per Table 1 and Figure 2.



Worksheet D.5-1: Factor of Safety and Design Infiltration Rate Worksheet

Factor of Safety and Design Infiltration Rate Worksheet Worksheet D.5-1									
Facto	or Category	Factor Description	Assig Weigl	ned ht (w)	Factor Value (v)	$\begin{array}{c} Product (p) \\ p = w \times v \end{array}$			
		Soil assessment methods	0.25		2	0.5			
		Predominant soil texture	0.25		2	0.5			
Α	Suitability	Site soil variability	0.25		2	0.5			
11	Assessment	Depth to groundwater / impervious layer	0.25		2	0.5			
		Suitability Assessment Safety Factor, S	2						
		Level of pretreatment/ expected sediment loads	0.5		2	1			
В	Design	Redundancy/resiliency	0.25		2	0.5			
		Compaction during construction	0.25		2	0.5			
		Design Safety Factor, $S_B = \Sigma p$		2					
Com	bined Safety Facto	or, $S_{\text{total}} = S_A \times S_B$				4			
Observed Infiltration Rate, inch/hr, K <sub>observed</sub> (corrected for test-specific bias)  0.18									
Desig	Design Infiltration Rate, in/hr, $K_{design} = K_{observed} / S_{total}$ 0.045								

## Supporting Data

Briefly describe infiltration test and provide reference to test forms:

Leighton and Associates Inc took infiltration samples per report "Field Percolation Testing Letter Report" in Attachment 6. The observed infiltration rate per this DMA is nearest to P-4 per Table 1 and Figure 2.



Worksheet D.5-1: Factor of Safety and Design Infiltration Rate Worksheet

Factor of Safety and Design Infiltration Rate Worksheet Worksheet D.5-1									
Facto	or Category	Factor Description	Assign Weigh		Factor Value (v)	$\begin{array}{c} Product (p) \\ p = w \times v \end{array}$			
		Soil assessment methods	0.25		2	0.5			
		Predominant soil texture	0.25		2	0.5			
Α	Suitability	Site soil variability	0.25		2	0.5			
11	Assessment	Depth to groundwater / impervious layer	0.25		2	0.5			
		Suitability Assessment Safety Factor, S		2					
		Level of pretreatment/ expected sediment loads	0.5		2	1			
В	Design	Redundancy/resiliency	0.25		2	0.5			
		Compaction during construction	0.25		2	0.5			
		Design Safety Factor, $S_B = \Sigma p$		2					
Com	bined Safety Facto	or, $S_{\text{total}} = S_A \times S_B$				4			
Observed Infiltration Rate, inch/hr, K <sub>observed</sub> (corrected for test-specific bias)									
Desig	Design Infiltration Rate, in/hr, $K_{design} = K_{observed} / S_{total}$ 0.095								
Community Date									

### Supporting Data

Briefly describe infiltration test and provide reference to test forms:

Leighton and Associates Inc took infiltration samples per report "Field Percolation Testing Letter Report" in Attachment 6. The observed infiltration rate per this DMA is nearest to P-2 per Table 1 and Figure 2.



#### Appendix D: Approved Infiltration Rate Assessment Methods

Worksheet D.5-1: Factor of Safety and Design Infiltration Rate Worksheet

Fact	Factor of Safety and Design Infiltration Rate Worksheet Worksheet D.5-1										
Facto	or Category	Factor Description	Assigned Weight (w)		Factor Value (v)	$\begin{array}{c} Product (p) \\ p = w \times v \end{array}$					
		Soil assessment methods	0.25		2	0.5					
		Predominant soil texture	0.25		2	0.5					
A	Suitability	Site soil variability	0.25		2	0.5					
	Assessment	Depth to groundwater / impervious layer	0.25		2	0.5					
		Suitability Assessment Safety Factor, S		2							
		Level of pretreatment/ expected sediment loads	0.5		2	1					
В	Design	Redundancy/resiliency	0.25		2	0.5					
		Compaction during construction	0.25	0.25		0.5					
		Design Safety Factor, $S_B = \Sigma p$		2							
Com	bined Safety Facto	or, $S_{\text{total}} = S_A \times S_B$				4					
Observed Infiltration Rate, inch/hr, K <sub>observed</sub> (corrected for test-specific bias)											
Desig	gn Infiltration Rat	e, in/hr, $K_{design} = K_{observed} / S_{total}$			C	).21					

### Supporting Data

Briefly describe infiltration test and provide reference to test forms:

Leighton and Associates Inc took infiltration samples per report "Field Percolation Testing Letter Report" in Attachment 6. The observed infiltration rate per this DMA is nearest to P-1 per Table 1 and Figure 2.



#### Appendix D: Approved Infiltration Rate Assessment Methods

Worksheet D.5-1: Factor of Safety and Design Infiltration Rate Worksheet

Factor of Safety and Design Infiltration Rate Worksheet Worksheet D.5-1									
Facto	or Category	Factor Description	Assigned Weight (w)		Factor Value (v)	$\begin{array}{c} Product (p) \\ p = w \times v \end{array}$			
		Soil assessment methods	0.25		2	0.5			
		Predominant soil texture	0.25		2	0.5			
Α	Suitability	Site soil variability	0.25		2	0.5			
71	Assessment	Depth to groundwater / impervious layer	0.25		2	0.5			
		Suitability Assessment Safety Factor, S	2						
		Level of pretreatment/ expected sediment loads	0.5		2	1			
В	Design	Redundancy/resiliency	0.25		2	0.5			
		Compaction during construction	0.25		2	0.5			
		Design Safety Factor, $S_B = \Sigma p$			2				
Com	bined Safety Facto	or, $S_{\text{total}} = S_A \times S_B$				4			
Observed Infiltration Rate, inch/hr, K <sub>observed</sub> (corrected for test-specific bias)									
Desig	gn Infiltration Rat	e, in/hr, $K_{design} = K_{observed} / S_{total}$			(	).21			

### Supporting Data

Briefly describe infiltration test and provide reference to test forms:

Leighton and Associates Inc took infiltration samples per report "Field Percolation Testing Letter Report" in Attachment 6. The observed infiltration rate per this DMA is nearest to P-1 per Table 1 and Figure 2.



Worksheet D.5-1: Factor of Safety and Design Infiltration Rate Worksheet

Factor of Safety and Design Infiltration Rate Worksheet Worksheet D.5-1									
Facto	or Category	Factor Description	Assigned Weight (w)		Factor Value (v)	$\begin{array}{c} Product (p) \\ p = w \times v \end{array}$			
		Soil assessment methods	0.25		2	0.5			
		Predominant soil texture	0.25		2	0.5			
Α	Suitability	Site soil variability	0.25		2	0.5			
71	Assessment	Depth to groundwater / impervious layer	0.25		2	0.5			
		Suitability Assessment Safety Factor, S	2						
		Level of pretreatment/ expected sediment loads	0.5		2	1			
В	Design	Redundancy/resiliency	0.25		2	0.5			
		Compaction during construction	0.25		2	0.5			
		Design Safety Factor, $S_B = \Sigma p$		2					
Com	bined Safety Facto	or, $S_{\text{total}} = S_A \times S_B$				4			
Observed Infiltration Rate, inch/hr, K <sub>observed</sub> (corrected for test-specific bias)  0.18									
Desig	Design Infiltration Rate, in/hr, $K_{design} = K_{observed} / S_{total}$ $0.045$								
Company time Date									

## Supporting Data

Briefly describe infiltration test and provide reference to test forms:

Leighton and Associates Inc took infiltration samples per report "Field Percolation Testing Letter Report" in Attachment 6. The observed infiltration rate per this DMA is nearest to P-4 per Table 1 and Figure 2.



#### E.13. BF-1 Biofiltration



Location: 43<sup>rd</sup> Street and Logan Avenue, San Diego, California

#### MS4 Permit Category

Biofiltration

#### **Manual Category**

Biofiltration

#### **Applicable Performance Standard**

Pollutant Control Flow Control

#### **Primary Benefits**

Treatment
Volume Reduction (Incidental)
Peak Flow Attenuation (Optional)

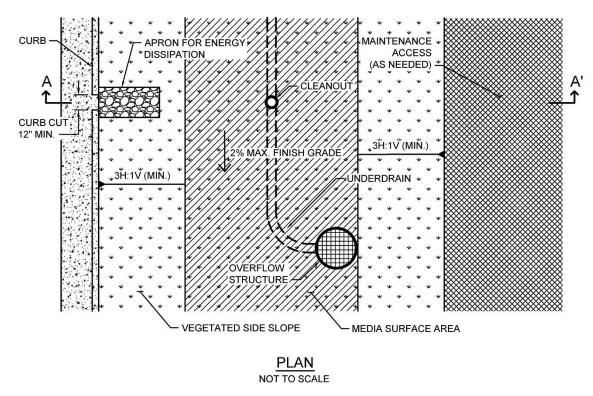
#### Description

Biofiltration (Bioretention with underdrain) facilities are vegetated surface water systems that filter water through vegetation, and soil or engineered media prior to discharge via underdrain or overflow to the downstream conveyance system. Bioretention with underdrain facilities are commonly incorporated into the site within parking lot landscaping, along roadsides, and in open spaces. Because these types of facilities have limited or no infiltration, they are typically designed to provide enough hydraulic head to move flows through the underdrain connection to the storm drain system. Treatment is achieved through filtration, sedimentation, sorption, biochemical processes and plant uptake.

Typical bioretention with underdrain components include:

- Inflow distribution mechanisms (e.g, perimeter flow spreader or filter strips)
- Energy dissipation mechanism for concentrated inflows (e.g., splash blocks or riprap)
- Shallow surface ponding for captured flows
- Side slope and basin bottom vegetation selected based on expected climate and ponding depth
- Non-floating mulch layer
- Media layer (planting mix or engineered media) capable of supporting vegetation growth
- Filter course layer (aka choking layer) consisting of aggregate to prevent the migration of fines into uncompacted native soils or the aggregate storage layer
- Aggregate storage layer with underdrain(s)
- Impermeable liner or uncompacted native soils at the bottom of the facility
- Overflow structure





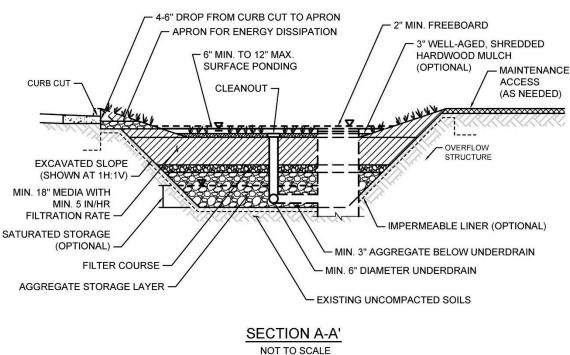


Figure E.13-E.13-1: Typical plan and Section view of a Biofiltration BMP

#### Design Adaptations for Project Goals

Biofiltration Treatment BMP for storm water pollutant control. The system is lined or un-lined to provide incidental infiltration, and an underdrain is provided at the bottom to carry away filtered runoff. This configuration is considered to provide biofiltration treatment via flow through the media layer. Storage provided above the underdrain within surface ponding, media, and aggregate storage is considered included in the biofiltration treatment volume. Saturated storage within the aggregate storage layer can be added to this design by raising the underdrain above the bottom of the aggregate storage layer or via an internal weir structure designed to maintain a specific water level elevation.

Integrated storm water flow control and pollutant control configuration. The system can be designed to provide flow rate and duration control by primarily providing increased surface ponding and/or having a deeper aggregate storage layer above the underdrain. This will allow for significant detention storage, which can be controlled via inclusion of an outlet structure at the downstream end of the underdrain.

#### **Design Criteria and Considerations**

Bioretention with underdrain must meet the following design criteria. Deviations from the below criteria may be approved at the discretion of the City Engineer if it is determined to be appropriate:

	Siting and Design	Intent/Rationale
	Placement observes geotechnical recommendations regarding potential hazards (e.g., slope stability, landslides, liquefaction zones) and setbacks (e.g., slopes, foundations, utilities).	Must not negatively impact existing site geotechnical concerns.
	An impermeable liner or other hydraulic restriction layer is included if site constraints indicate that infiltration or lateral flows should not be allowed.	Lining prevents storm water from impacting groundwater and/or sensitive environmental or geotechnical features. Incidental infiltration, when allowable, can aid in pollutant removal and groundwater recharge.
	Contributing tributary area shall be $\leq 5$ acres ( $\leq 1$ acre preferred).	Bigger BMPs require additional design features for proper performance. Contributing tributary area greater than 5 acres may be allowed at the discretion of the City Engineer if the following conditions are met: 1) incorporate design features (e.g. flow spreaders) to minimizing short circuiting of flows in the BMP and 2) incorporate additional design features requested by the City Engineer for proper performance of the regional BMP.
	Finish grade of the facility is $\leq 2\%$ .	Flatter surfaces reduce erosion and channelization within the facility.
Surfac	ce Ponding	



## Appendix E: BMP Design Fact Sheets

	Siting and Design	Intent/Rationale
	Surface ponding is limited to a 24-hour drawdown time.	Surface ponding limited to 24 hour for plant health.  Surface ponding drawdown time greater than 24-hours but less than 96 hours may be allowed at the discretion of the City Engineer if certified by a landscape architect or agronomist.
	Surface ponding depth is $\geq 6$ and $\leq 12$ inches.	Surface ponding capacity lowers subsurface storage requirements. Deep surface ponding raises safety concerns.  Surface ponding depth greater than 12 inches (for additional pollutant control or surface outlet structures or flow-control orifices) may be allowed at the discretion of the City Engineer if the following conditions are met:  1) surface ponding depth drawdown time is less than 24 hours; and 2) safety issues and fencing requirements are considered (typically ponding greater than 18" will require a fence and/or flatter side slopes) and 3) potential for elevated clogging risk is considered.
	A minimum of 2 inches of freeboard is provided.	Freeboard provides room for head over overflow structures and minimizes risk of uncontrolled surface discharge.
	Side slopes are stabilized with vegetation and are = 3H:1V or shallower.	Gentler side slopes are safer, less prone to erosion, able to establish vegetation more quickly and easier to maintain.
Veget	tation	
	Plantings are suitable for the climate and expected ponding depth. A plant list to aid in selection can be found in Appendix E.20.	Plants suited to the climate and ponding depth are more likely to survive.
	An irrigation system with a connection to water supply should be provided as needed.	Seasonal irrigation might be needed to keep plants healthy.
Mulcl	h (Mandatory)	
	A minimum of 3 inches of well-aged, shredded hardwood mulch that has been stockpiled or stored for at least 12 months is provided.	Mulch will suppress weeds and maintain moisture for plant growth. Aging mulch kills pathogens and weed seeds and allows the beneficial microbes to multiply.
Media	a Layer	



	Siting and Design	Intent/Rationale
	Media maintains a minimum filtration rate of 5 in/hr over lifetime of facility. Additional Criteria for media hydraulic conductivity described in the bioretention soil media model specification (Appendix F.4)	A filtration rate of at least 5 inches per hour allows soil to drain between events. The initial rate should be higher than long term target rate to account for clogging over time. However an excessively high initial rate can have a negative impact on treatment performance, therefore an upper limit is needed.
	Media is a minimum 18 inches deep, meeting the following media specifications:  Model biorention soil media specification provided in Appendix F.4 or  County of San Diego Low Impact Development Handbook: Appendix G - Bioretention Soil Specification (June 2014, unless superseded by more recent edition).	A deep media layer provides additional filtration and supports plants with deeper roots.  Standard specifications shall be followed.  For non-standard or proprietary designs, compliance with Appendix F.1 ensures that
	Alternatively, for proprietary designs and custom media mixes not meeting the media specifications, the media meets the pollutant treatment performance criteria in Section F.1.	adequate treatment performance will be provided.
	Media surface area is 3% of contributing area times adjusted runoff factor or greater. Unless demonstrated that the BMP surface area can be smaller than 3%.	Greater surface area to tributary area ratios: a) maximizes volume retention as required by the MS4 Permit and b) decrease loading rates per square foot and therefore increase longevity.  Adjusted runoff factor is to account for site design BMPs implemented upstream of the BMP (such as rain barrels, impervious area dispersion, etc.). Refer to Appendix B.2 guidance.  Use Worksheet B.5-1 Line 26 to estimate the minimum surface area required per this criteria.
	Where receiving waters are impaired or have a TMDL for nutrients, the system is designed with nutrient sensitive media design (see fact sheet BF-2).	Potential for pollutant export is partly a function of media composition; media design must minimize potential for export of nutrients, particularly where receiving waters are impaired for nutrients.
Filter	r Course Layer	
	A filter course is used to prevent migration of fines through layers of the facility. Filter fabric is not used.	Migration of media can cause clogging of the aggregate storage layer void spaces or subgrade and can result in poor water quality performance for turbidity and suspended solids. Filter fabric is more likely to clog.



## Appendix E: BMP Design Fact Sheets

	Siting and Design	Intent/Rationale
	Filter course is washed and free of fines.	Washing aggregate will help eliminate fines that could clog the facility and impede infiltration.
	To reduce clogging potential, a two-layer filter course (aka choking stone system) is used consisting of one 3" layer of clean and washed ASTM 33 Fine Aggregate Sand overlying a 3" layer of ASTM No 8 Stone (Appendix F.5).	This specification has been developed to maintain permeability while limiting the migration of media material into the stone reservoir and underdrain system.
Aggre	egate Storage Layer	
	ASTM #57 open graded stone is used for the storage layer and a two layer filter course (detailed above) is used above this layer	This layer provides additional storage capacity. ASTM #8 stone provides an acceptable choking/bridging interface with the particles in ASTM #57 stone.
	The depth of aggregate provided (12-inch typical) and storage layer configuration is adequate for providing conveyance for underdrain flows to the outlet structure.	Proper storage layer configuration and underdrain placement will minimize facility drawdown time.
Inflo	w, Underdrain, and Outflow Structures	
	Inflow, underdrains and outflow structures are accessible for inspection and maintenance.	Maintenance will prevent clogging and ensure proper operation of the flow control structures.
	Inflow velocities are limited to 3 ft/s or less or use energy dissipation methods. (e.g., riprap, level spreader) for concentrated inflows.	High inflow velocities can cause erosion, scour and/or channeling.
	Curb cut inlets are at least 12 inches wide, have a 4-6 inch reveal (drop) and an apron and energy dissipation as needed.	Inlets must not restrict flow and apron prevents blockage from vegetation as it grows in. Energy dissipation prevents erosion.
	Underdrain outlet elevation should be a minimum of 3 inches above the bottom elevation of the aggregate storage layer.	A minimal separation from subgrade or the liner lessens the risk of fines entering the underdrain and can improve hydraulic performance by allowing perforations to remain unblocked.
	Minimum underdrain diameter is 8 inches.	Smaller diameter underdrains are prone to clogging.
	Underdrains should be affixed with an upturned elbow to an elevation at least 9 to 12 inches above the invert of the underdrain.	An upturned elbow reduces velocity in the underdrain pipe and can help reduce mobilization of sediments from the underdrain and media bed.



Siting and Design	Intent/Rationale			
Underdrains are made of slotted, PVC pipe conforming to ASTM D 3034 or equivalent or corrugated, HDPE pipe conforming to AASHTO 252M or equivalent.	Slotted underdrains provide greater intake capacity, clog resistant drainage, and reduced entrance velocity into the pipe, thereby reducing the chances of solids migration.			
An underdrain cleanout with a minimum 8-inch diameter and lockable cap is placed every 50 feet as required based on underdrain length.	Properly spaced cleanouts will facilitate underdrain maintenance.			
Overflow is safely conveyed to a downstream storm drain system or discharge point Size overflow structure to pass 100-year peak flow for on-line infiltration basins and water quality peak flow for off-line basins.	Planning for overflow lessens the risk of property damage due to flooding.			

#### Conceptual Design and Sizing Approach for Storm Water Pollutant Control Only

To design bioretention with underdrain for storm water pollutant control only (no flow control required), the following steps should be taken:

- 1. Verify that siting and design criteria have been met, including placement requirements, contributing tributary area, maximum side and finish grade slopes, and the recommended media surface area tributary ratio.
- 2. Calculate the DCV per Appendix B based on expected site design runoff for tributary areas.
- 3. Use the sizing worksheet presented in Appendix B.5 to size biofiltration BMPs.

#### Conceptual Design and Sizing Approach when Storm Water Flow Control is Applicable

Control of flow rates and/or durations will typically require significant surface ponding and/or aggregate storage volumes, and therefore the following steps should be taken prior to determination of storm water pollutant control design. Pre-development and allowable post-project flow rates and durations should be determined as discussed in Chapter 6 of the manual.

- 1. Verify that siting and design criteria have been met, including placement requirements, contributing tributary area, maximum side and finish grade slopes, and the recommended media surface area tributary ratio.
- 2. Iteratively determine the facility footprint area, surface ponding and/or aggregate storage layer depth required to provide detention storage to reduce flow rates and durations to allowable limits. Flow rates and durations can be controlled from detention storage by altering outlet structure orifice size(s) and/or water control levels. Multi-level orifices can be used within an outlet structure to control the full range of flows.
- 3. If bioretention with underdrain cannot fully provide the flow rate and duration control required by this manual, an upstream or downstream structure with significant storage volume such as an underground vault can be used to provide remaining controls.
- 4. After bioretention with underdrain has been designed to meet flow control requirements, calculations must be completed to verify if storm water pollutant control requirements to treat the DCV have been met.



# ATTACHMENT 2 BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

This is the cover sheet for Attachment 2.

$\geq$	Mark	this	box	if this	attachment	is	empty	because	the	project	is	exempt	from	PDP	hydrom	odificati	on
	manag	geme	nt rec	quirem	ents.												



#### Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 2a	Hydromodification Management     Exhibit (Required)	Included  See Hydromodification Management Exhibit Checklist.
Attachment 2b	Management of Critical Coarse Sediment Yield Areas (WMAA Exhibit is required, additional analyses are optional)  See Section 6.2 of the BMP Design Manual.	<ul> <li>☑ Exhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map (Required)</li> <li>○ Optional analyses for Critical Coarse Sediment Yield Area Determination</li> <li>☐ 6.2.1 Verification of Geomorphic Landscape Units Onsite</li> <li>☐ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment</li> <li>☐ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite</li> </ul>
Attachment 2c	Geomorphic Assessment of Receiving Channels (Optional)  See Section 6.3.4 of the BMP Design Manual.	☐ Not performed ☐ Included ☐ Submitted as separate stand-alone document
Attachment 2d	Flow Control Facility Design and Structural BMP Drawdown Calculations (Required)  Overflow Design Summary for each structural BMP  See Chapter 6 and Appendix G of the BMP Design Manual	☐ Included ☐ Submitted as separate stand-alone document
Attachment 2e	Vector Control Plan (Required when structural BMPs will not drain in 96 hours)	☐ Included ☐ Not required because BMPs will drain in less than 96 hours

# Use this checklist to ensure the required information has been included on the Hydromodification Management Exhibit:

The Hydromodification Management Exhibit must identify:
Underlying hydrologic soil group
Approximate depth to groundwater
Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
Critical coarse sediment yield areas to be protected
Existing topography
Existing and proposed site drainage network and connections to drainage offsite
Proposed grading
Proposed impervious features
Proposed design features and surface treatments used to minimize imperviousness
Point(s) of Compliance (POC) for Hydromodification Management
Existing and proposed drainage boundary and drainage area to each POC (when necessary, create
separate exhibits for pre-development and post-project conditions)
Structural BMPs for hydromodification management (identify location, type of BMP, and size/detail)

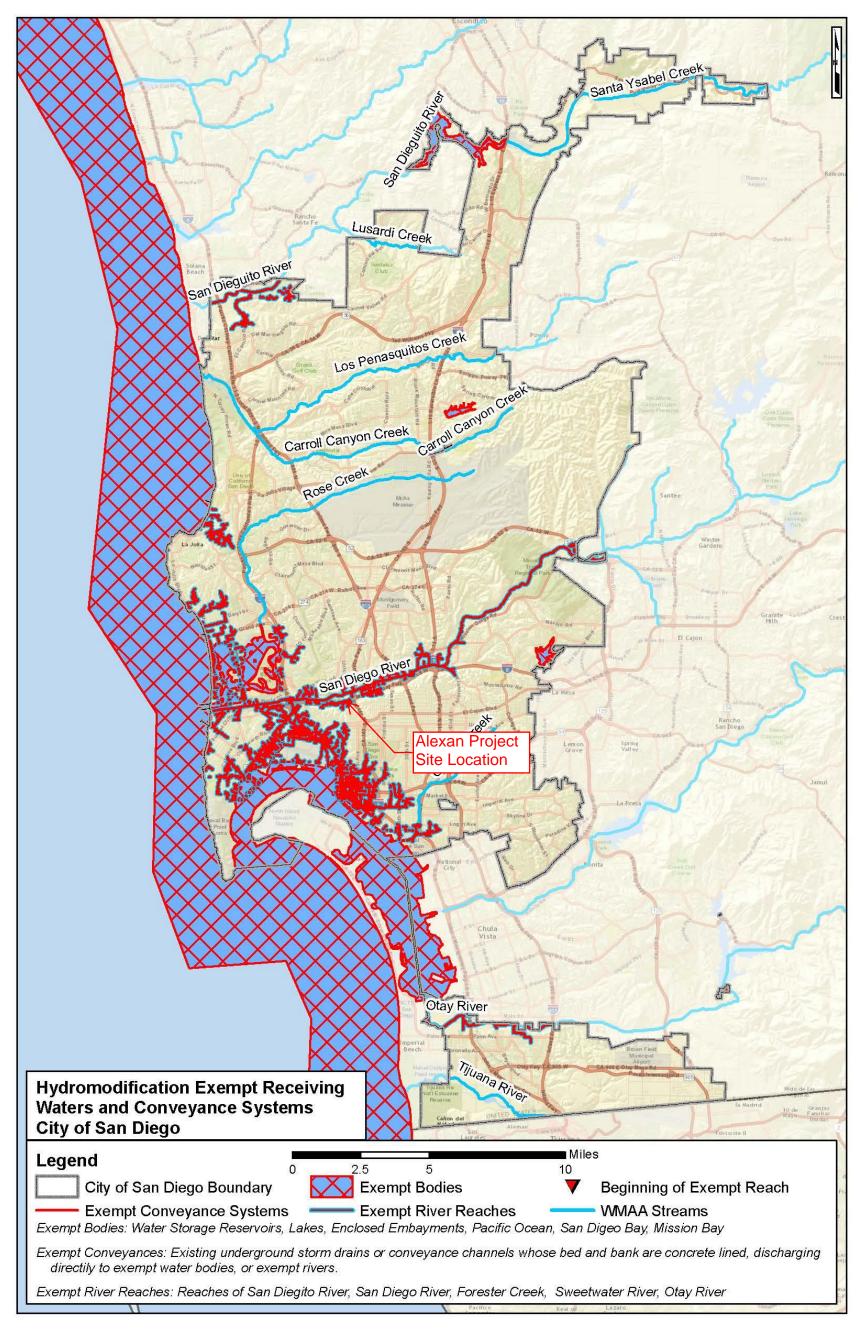


Figure H-G.2-2 Hydromodification Exempt Areas



# ATTACHMENT 3 STRUCTURAL BMP MAINTENANCE INFORMATION

This is the cover sheet for Attachment 3.



### Indicate which Items are Included:

Attachment Sequence	Contents	Checklist					
Attachment 3a	Structural BMP Maintenance Thresholds and Actions (Required)	Included  See Structural BMP Maintenance Information Checklist.					
Attachment 3b	Draft Maintenance Agreement (when applicable)	☐ Included ☐ Not Applicable					

# Use this checklist to ensure the required information has been included in the Structural BMP Maintenance Information Attachment:

## Preliminary Design / Planning / CEQA level submittal:

Attachment 3a must identify:
☐ Typical maintenance indicators and actions for proposed structural BMP(s) based on Section 7.7 of the BMP Design Manual
• Attachment 3b is not required for preliminary design / planning / CEQA level submittal.
Final Design level submittal:
Attachment 3a must identify:
□ Specific maintenance indicators and actions for proposed structural BMP(s). This shall be based on Section 7.7 of the BMP Design Manual and enhanced to reflect actual proposed components of the structural BMP(s) □ How to access the structural BMP(s) to inspect and perform maintenance □ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds) □ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
<ul> <li>☐ Recommended equipment to perform maintenance</li> <li>☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management</li> </ul>
Attachment 3b: For private entity operation and maintenance, Attachment 3b shall include a draft maintenance agreement in the local jurisdiction's standard format (PDP applicant to contact the City Engineer to obtain the current maintenance agreement forms).



#### Chapter 7: Long Term Operation and Maintenance

Table 7-4. Maintenance Indicators and Actions for Filtration BMPs

Typical Maintenance Indicator(s) for Filtration BMPs	Maintenance Actions
Accumulation of sediment, litter, or debris	Remove and properly dispose accumulated materials.
Obstructed inlet or outlet structure	Clear obstructions.
Clogged filter media	Remove and properly dispose filter media, and replace with fresh media.
Damage to components of the filtration system	Repair or replace as applicable.
Note: For proprietary media filters, refer t	o the manufacturer's maintenance guide.

#### 7.7.4 Maintenance of Detention BMPs

"Detention BMPs" includes basins, cisterns, vaults, and underground galleries that are primarily designed to store runoff for controlled release to downstream systems. For the purpose of the maintenance discussion, this category does not include an infiltration component (refer to "vegetated infiltration or filtration BMPs" or "non-vegetated infiltration BMPs" above). Applicable Fact Sheets may include HU-1 (cistern) or FT-4 (extended detention basin). There are many possible configurations of above ground and underground detention BMPs, including both proprietary and non-proprietary systems. The project civil engineer is responsible for determining which maintenance indicators and actions shown below are applicable based on the components of the structural BMP.

## Chapter 7: Long Term Operation and Maintenance

Table 7-2. Maintenance Indicators and Actions for Vegetated BMPs

Tuble / Zi iiIumitemume	c indicators and fections for vegetated Divir s
Typical Maintenance Indicator(s) for Vegetated BMPs	Maintenance Actions
Accumulation of sediment, litter, or debris	Remove and properly dispose of accumulated materials, without damage to the vegetation.
Poor vegetation establishment	Re-seed, re-plant, or re-establish vegetation per original plans.
Overgrown vegetation	Mow or trim as appropriate, but not less than the design height of the vegetation per original plans when applicable (e.g. a vegetated swale may require a minimum vegetation height).
Erosion due to concentrated irrigation flow	Repair/re-seed/re-plant eroded areas and adjust the irrigation system.
Erosion due to concentrated storm water runoff flow	Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the City Engineer shall be contacted prior to any additional repairs or reconstruction.
Standing water in vegetated swales	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, loosening or replacing top soil to allow for better infiltration, or minor re-grading for proper drainage. If the issue is not corrected by restoring the BMP to the original plan and grade, the City Engineer shall be contacted prior to any additional repairs or reconstruction.
Standing water in bioretention, biofiltration with partial retention, or biofiltration areas, or flow-through planter boxes for longer than 96 hours following a storm event*	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains (where applicable), or repairing/replacing clogged or compacted soils.
Obstructed inlet or outlet structure	Clear obstructions.
Damage to structural components such as weirs, inlet or outlet structures	Repair or replace as applicable.
*These DMDs transcally include	nondinal array as next of their function which may take 06 hours to

<sup>\*</sup>These BMPs typically include a surface ponding layer as part of their function which may take 96 hours to drain following a storm event.



#### **ATTACHMENT 4**

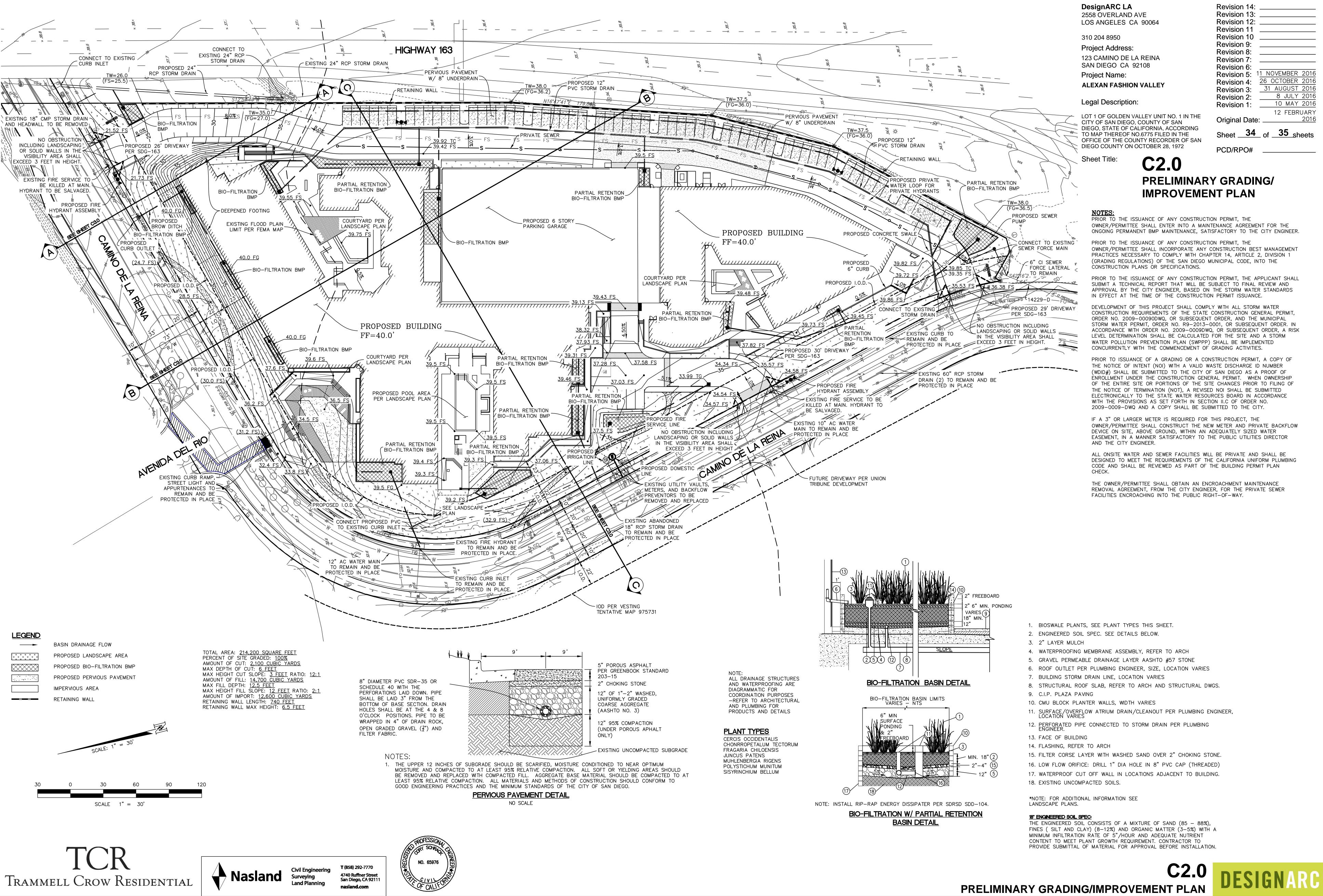
## Copy of Plan Sheets Showing Permanent Storm Water BMPs

This is the cover sheet for Attachment 4.



## Use this checklist to ensure the required information has been included on the plans:

The plans must identify:
Structural BMP(s) with ID numbers matching Form I-6 Summary of PDP Structural BMPs
☐ The grading and drainage design shown on the plans must be consistent with the delineation of
DMAs shown on the DMA exhibit
Details and specifications for construction of structural BMP(s)
Signage indicating the location and boundary of structural BMP(s) as required by the City Engineer
How to access the structural BMP(s) to inspect and perform maintenance
Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other
features that allow the inspector to view necessary components of the structural BMP and compar
to maintenance thresholds)
Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g.
level of accumulated materials that triggers removal of the materials, to be identified based o
viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within th
BMP)
Recommended equipment to perform maintenance
When applicable, necessary special training or certification requirements for inspection and
maintenance personnel such as confined space entry or hazardous waste management
☐ Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)
All BMPs must be fully dimensioned on the plans
When propritery BMPs are used, site specific cross section with outflow, inflow and model number
shall be provided. Broucher photocopies are not allowed.



# ATTACHMENT 5 Drainage Report

Attach project's drainage report. Refer to Draiange Design Manual to determine the reporting requirements.



## **Preliminary Hydrology Study**

# For Alexan

Fashion Valley 123 Camino De La Reina San Diego, CA 92108

PTS #: 474568

Prepared for **Trammel Crow Residential**5790 Fleet Street, Suite 140
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N.E. Job No. 114-088.2

July 5, 2016

PROFESSIONAL CHARGE SOUND CHARC

 Cory Schrack
 R.C.E. 65976
 Date

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#### **PURPOSE:**

The purpose of this hydrology study is to show that the proposed Alexan project will not negatively impact existing hydrologic conditions. This report will calculate, analyze and compare storm water runoff for both the existing and proposed site conditions in order to ensure that the existing hydrologic regime is not negatively impacted by the project.

#### **DESCRIPTION:**

The Alexan project is located in the block bounded by Camino De La Reina underneath the Highway 163 and Interstate 8 in the Fashion Valley area of San Diego, California. The proposed project would construct multiple residential buildings consisting of a total of 236 dwelling units in 35-story buildings, and an unassociated 6 story parking garage. The project will also consist of 48 live-work units, commercial office space, a leasing office, and a commercial restaurant. The project will be confined to an area encompassing approximately 4.94 acres. The general direction of the storm water flow for this site is shown on the attached hydrology exhibits (Existing Conditions and Proposed Conditions Exhibits). This project is not subject to requirements set forth in CWA 401/404 because it does discharge to navigable waters.

#### VICINITY MAP



Source: Google Maps

#### **EXISTING DRAINAGE:**

The existing site encompasses approximately 4.94 acres and consists of 4 buildings, and two open parking lots. The existing conditions are considered to be four separate basins. Storm water from Basin 1 flows through the landscaped area on the east side of the property, sheet flows south towards a curb inlet, and ultimately outlets to an existing 60" storm drain main on Camino De La Reina. Basin 2 flows west through a pipe centered between the four buildings and outlets into landscaped areas, ultimately discharging onto Camino De La Reina. Basin 3 flows west into landscaping and discharges to existing curb inlet on Camino De La Reina. Basin 4 sheet flows northeast and outlets onto Camino De La Reina and ultimately enters a curb inlet.

See Appendix A – Existing Hydrologic Conditions Exhibit, for further information.

#### **PROPOSED DRAINAGE:**

The proposed conditions are considered to be divided into 17 drainage basins and will consist of 289 units in 3 5-story buildings, and an unassociated 6 story parking garage. Basins 1 through 6 are impervious runoff from the roof, which account for approximately 91,069 SF. Basins 1, 3, 4, and 5 will be routed via downspouts directly to proposed biofiltration planters. Basins 2 and 6 will be discharged from the roof downspouts which will connect to curb outlets, and ultimately drain to a planter via concrete swales. All of these planters will be discharged to existing storm drains on Camino De La Reina when overflow capacity is met. Basin 7 is the northeast driveway; on-site drainage consists of impervious flow from the asphalt, which will flow towards a curb inlet and bioinfiltration basin within the landscaped portion in the right-of-way. Overflow will outlet to a proposed offsite 24" RCP storm drain that connects to an existing curb inlet along Camino De La Reina. Basin 8 consists of the entire drive aisle and parking stalls along the eastern property. Storm water will flow away from the buildings towards the stalls at a 3% grade and filter through proposed permeable pavement. This treated water will discharge to one of the 60" RCP storm drains along Camino De La Reina via perforated pipe and PVC line. Basin 9 is the landscaped portion along Camino De La Reina and surface flows towards the street, where it runs along curb and gutter towards an existing curb inlet northeast of the property. Basin 10 consists of main driveway that leads to the parking garage, some landscaping, and walkways. Impervious flow from the driveway will be routed to a bio-filtration basin within the landscaped area. Overflow will discharge to a 60" RCP storm drain on Camino De La Reina via PVC. Basins 11 and 12 are concrete courtyards that flow towards bio-filtration basins. Basin 11 will overflow to a 60" RCP storm drain on Camino De La Reina via PVC. Basin 12 will overflow back to Camino De La Reina via proposed storm drains along the main back drive aisle. Basin 13 consists of the pool area, and drains towards a bio-filtration basin to the east, ultimately discharging to an existing curb inlet along Camino De La Reina. Basins 14 and 15 are self-mitigating landscaped areas that surface flow to Camino De La Reina and end in the same inlet as Basin 13. Basin 16 and 17 are considered to be de minims areas that will flow back to Camino De la Reina.

See Appendix B – Proposed Hydrologic Conditions Exhibit, for further information.

#### HYDROLOGY METHODOLOGY/DESIGN CRITERIA:

Storm water runoff for both the existing and proposed site conditions is calculated, analyzed and compared in order to ensure that the proposed conditions do not negatively affect the existing hydrologic regime. Runoff is calculated by utilizing methods outlined in the City of San Diego Drainage Design Manual. Topographical information has been obtained from Nasland. Hydrologic basin boundaries, landscape areas, and flow path characteristics such as change in elevation and length of flow are obtained from the Existing and Proposed Conditions Maps which are drafted in AutoCAD Civil 3D 2013 software. This information is utilized to determine the basin area, runoff coefficient and inlet time for each basin.

#### **CALCULATIONS:**

Calculations have been performed per Rational Method guidelines set forth in Appendix I of the City of San Diego Drainage Design Manual.

- Runoff Coefficients have been calculated per Table 2 of the Drainage Design Manual.
- Land Use type was used per Table 2 of the Drainage Design Manual. The existing condition was considered Commercial and therefore the coefficient used was 0.85. The proposed condition is considered Residential Multi-Family and the coefficient is 0.70, however a tabulated C value was used for the proposed conditions due to the significant difference in imperviousness.
- Stormwater runoff is considered to be in an Overland Flow condition until it reaches a drainage structure such as a drainage ditch, gutter, or storm drain. Time of concentration for Urban Area Overland Flow is determined per the equation published on the "Urban Areas Overland Time of Flow Curves" located in Appendix I-E of the City of San Diego Drainage Design Manual
- Time of concentration for storm water runoff flowing in a drainage ditch, gutter or storm drain is determined per the "Gutter & Roadway Discharge- Velocity Chart" located in Appendix I-F of the City of San Diego Drainage Design Manual.
- For hydrology calculations refer to the pages following. For attachments and references to the calculations see **Appendix C Hydrology References**

## **Alexan – Existing & Proposed Time of Concentrations**

Alexan - Existing & Proposed Time of Concentrations

Existing	Site Condi	tions														
	Runoff	1 Urban A	Area Overl	and Flow	Tc			<sup>2</sup> Gutter a	& Roadwa	ay Flow TC						
Basin	Coefficient	High Point	Low Point	ΔΕ	Length	Avg Slope	Toverland	High	Low	ΔΕ	Length	Ave Slope	Flowrate	Velocity	T <sub>gutter</sub>	T <sub>c</sub>
	(C)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(min)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(cfs)	(fps)	(min)	(min)
1	0.85	42.0	35.5	6.6	310	0.021	6.2									6.2
2	0.50							39.3	37.5	1.8	300.0	0.006	0.44	2.22	2.0	5.0
3	0.85	40.3	31.6	8.7	110	0.079	2.4									5.0
4	0.85	39.3	21.3	18.0	411	0.044	5.6									5.6
Proposed Site Conditions																
	Runoff	1 Urban A	Area Overl	and Flow	Tc			<sup>2</sup> Gutter a	& Roadwa	ay Flow TC						
Basin	Coefficient	High Point	Low Point	ΔΕ	Length	Avg Slope	Toverland	High	Low	ΔΕ	Length	Ave Slope	Flowrate	Velocity	T <sub>gutter</sub>	T <sub>c</sub>
	(C)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(min)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(cfs)	(fps)	(min)	(min)
1	0.85	100.5	100.0	0.5	70	0.007	4.2									5.0
2	0.85	100.5	100.0	0.5	85	0.006	4.9									5.0
3	0.85	100.5	100.0	0.5	125	0.004	6.8									6.8
4	0.85	100.5	100.0	0.5	170	0.003	8.8									8.8
5	0.85	100.5	100.0	0.5	80	0.006	4.7									5.0
6	0.85	100.5	100.0	0.5	155	0.003	8.1									8.1
7	0.85	38.5	22.0	16.5	190	0.087	3.0									5.0
8	0.85	39.9	38.5	1.4	45	0.032	2.1	35.0	29.0	6.0	662.0	0.009	0.90	4.58	2.0	5.0
9	0.10	39.5	23.0	16.5	138	0.120	9.3									9.3
10	0.85	39.5	34.0	5.5	135	0.041	3.3									5.0
11	0.85	39.6	39.0	0.6	125	0.005	6.4									6.4
12	0.85	39.6	39.0	0.6	90	0.007	4.9									5.0
13	0.85	40.0	39.2	0.8	91	0.009	4.5									5.0

<sup>1.</sup> Stormwater runoff is considered to be in an Overland Flow condition until it reaches a drainage structure such as a drainage ditch, gutter, or storm drain. Time of concentration for Ubran Area Overland Flow is determined per the equation published on the "Urban Areas Overland Time of Flow Curves" located in Appendix I-E of the City of San Diego Drainage Design Manual. The time of concentration is determined using the "Nomigraph for Determination of Time of Concentration for Natural Watersheds" located in Appendix I-E in the City of San Diego Drainage Design Manual.

4.9

0.035

0.015

0.015 0.086

Alexan - Existing & Proposed Surface Runoff

Basin	Basin	Basin														
	Area	Acreage (A)	Pervious Area	Impervious Area	% Pervious	· ·	<sup>1</sup> Runoff Coefficient	<sup>2</sup> Tc	<sup>3</sup> Intensity 2-year	Q <sub>2</sub>	<sup>3</sup> Intensity 10-year	Q <sub>10</sub>	<sup>3</sup> Intensity 50-year	Q <sub>50</sub>	<sup>3</sup> Intensity 100-year	Q <sub>100</sub>
	(sf)	(ac)	(sf)	(sf)	%	%	(C)	(min)	(in/hr)	(cfs)	(in/hr)	(cfs)	(in/hr)	(cfs)	(in/hr)	(cfs)
1	82,578	1.90	23,185	59,393	28%	72%	0.85	6.2	2.30	3.71	3.25	5.24	3.95	6.36	4.00	6.45
2	36,626	0.84	11,350	25,276	31%	69%	0.50	5.0	2.40	1.01	3.40	1.43	4.10	1.72	4.40	1.85
3	14,476	0.33	10,045	4,431	69%	31%	0.85	5.0	2.40	0.68	3.40	0.96	4.10	1.16	4.40	1.24
4	80,792	1.85	27,535	53,257	34%	66%	0.85	5.6	2.25	3.55	3.30	5.20	4.00	6.31	4.15	6.54
Total	214,472	4.92	72,115	142,357	34%	66%				8.94		12.83		15.55		16.08
Proposed Site Conditions																
Basin	Basin Area	Basin Acreage (A)	Pervious Area	Impervious Area	% Pervious	% Impervious	<sup>1</sup> Runoff Coefficient	<sup>2</sup> Tc	<sup>3</sup> Intensity 2-year	$Q_2$	<sup>3</sup> Intensity 10-year	Q <sub>10</sub>	<sup>3</sup> Intensity 50-year	Q <sub>50</sub>	<sup>3</sup> Intensity 100-year	Q <sub>100</sub>
	(sf)	(ac)	(sf)	(sf)	%	%	(C)	(min)	(in/hr)	(cfs)	(in/hr)	(cfs)	(in/hr)	(cfs)	(in/hr)	(cfs)
1	13.794	0.32	0	13.794	0%	100%	0.85	5.0	2.40	0.65	3.40	0.92	4.10	1.10	4.40	1.18
2	7.014	0.16	0	7,014	0%	100%	0.85	5.0	2.40	0.33	3.40	0.47	4.10	0.56	4.40	0.60
3	26.337	0.60	0	26,337	0%	100%	0.85	6.8	2.20	1.13	3.20	1.64	3.90	2.00	4.20	2.16
4	13.260	0.30	0	13.260	0%	100%	0.85	8.8	2.00	0.52	3.00	0.78	3.70	0.96	4.00	1.03
5	10.488	0.24	0	10,448	0%	100%	0.85	5.0	2.40	0.49	3.40	0.70	4.10	0.84	4.40	0.90
6	20,176	0.46	0	20,176	0%	100%	0.85	8.1	2.10	0.83	3.10	1.22	3.80	1.50	4.10	1.61
7	8.353	0.19	1,915	6,438	23%	77%	0.85	5.0	2.40	0.39	3.40	0.55	4.10	0.67	4.40	0.72
8	34.071	0.78	13,115	20.956	38%	62%	0.85	5.0	2.40	1.60	3.40	2.26	4.10	2.73	4.40	2.93
9	27.006	0.62	1,558	25,448	6%	94%	0.10	9.3	1.95	0.12	2.95	0.18	3.50	0.22	3.75	0.23
10	10,842	0.25	1,534	9,308	14%	86%	0.85	5.0	2.40	0.51	3.40	0.72	4.10	0.87	4.40	0.93
11	6,761	0.16	735	6,026	11%	89%	0.85	6.4	2.20	0.29	3.20	0.42	3.90	0.51	4.20	0.55
12	7,667	0.18	0	7,667	0%	100%	0.85	5.0	2.40	0.36	3.40	0.51	4.10	0.61	4.40	0.66
13	6,415	0.15	1,354	5,061	21%	79%	0.85	5.0	2.40	0.30	3.40	0.43	4.10	0.51	4.40	0.55
14	14,236	0.33	13,545	691	95%	5%	0.10	5.0	2.40	0.08	3.40	0.11	4.10	0.13	4.40	0.14
15	5,338	0.12	5,338	0	100%	0%	0.10	5.0	2.40	0.03	3.40	0.04	4.10	0.05	4.40	0.05
16	1,259	0.03	510	749	41%	59%	0.85	5.0	2.40	0.06	3.40	0.08	4.10	0.10	4.40	0.11
17	1,455	0.03	777	678	53%	47%	0.85	5.0	2.40	0.07	3.40	0.10	4.10	0.12	4.40	0.12
Total	214,472	4.92	40,381	174,051	19%	81%				7.74		11.12		13.48		14.49
							_								_	
						Change	in Site Sur	rface Ru	noff (CFS)	-1.20		-1.71		-2.07		-1.59

5.0

15

16

0.85

39.0

37.0

36.6

2.4

0.6

155

40

<sup>2.</sup> Time of concentration for stormwater runoff flowing in a drainage ditch, gutter or storm drain is determined per the "Gutter & Roadway Discharge-Veloctiy Chart" located in Appendix I-F of the City of San Diego Drainage Design Manual.

<sup>1.</sup> Runoff coefficients have been been determined by Table 3-1 in the San Diego County Hydrology Manual

<sup>2.</sup> See Existing and Proposed Tc Table for time of concentration calculations.

<sup>3.</sup> Intensity values have been calculated per the ""Intensity-Duration Design Chart" figure 3-2 of the San Diego County Hydrology Manual.

## **CONCLUSION:**

The Outfall Summary shows that the proposed Alexan will not increase the peak runoff discharge in a potential 50-year or 100-year storm event. In a responsible effort to minimize the negative impact on the environment, it is evident that the Alexan project should not be seen as a detrimental impact to existing hydrologic basin and drainage system.

## **ENGINEER OF WORK:**

This report was prepared under the supervision of Cory Schrack, PE, Project Manager for Nasland Engineering.

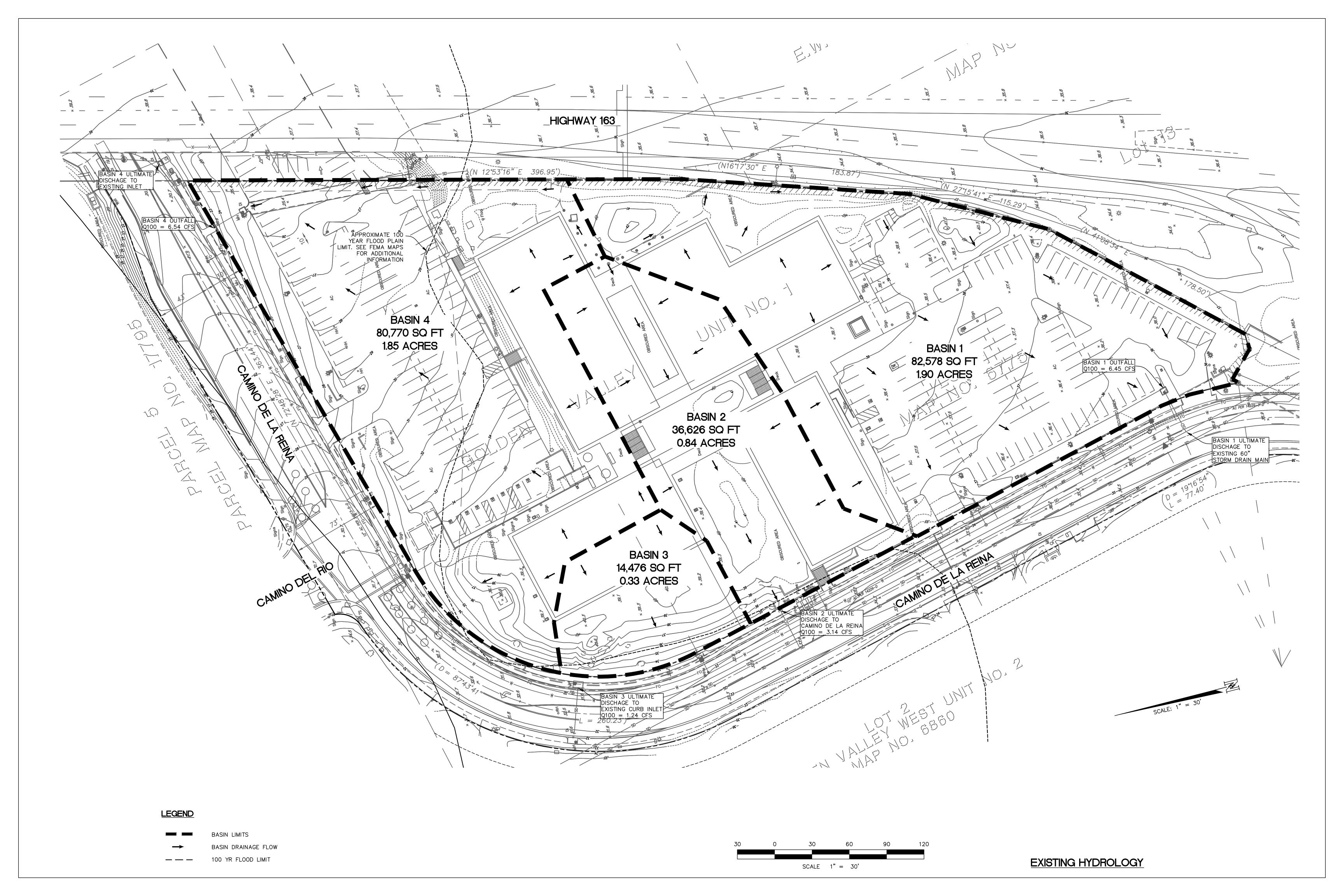
Cory Schrack • RCE 65976

Expires 06-30-18

## **APPENDICES**

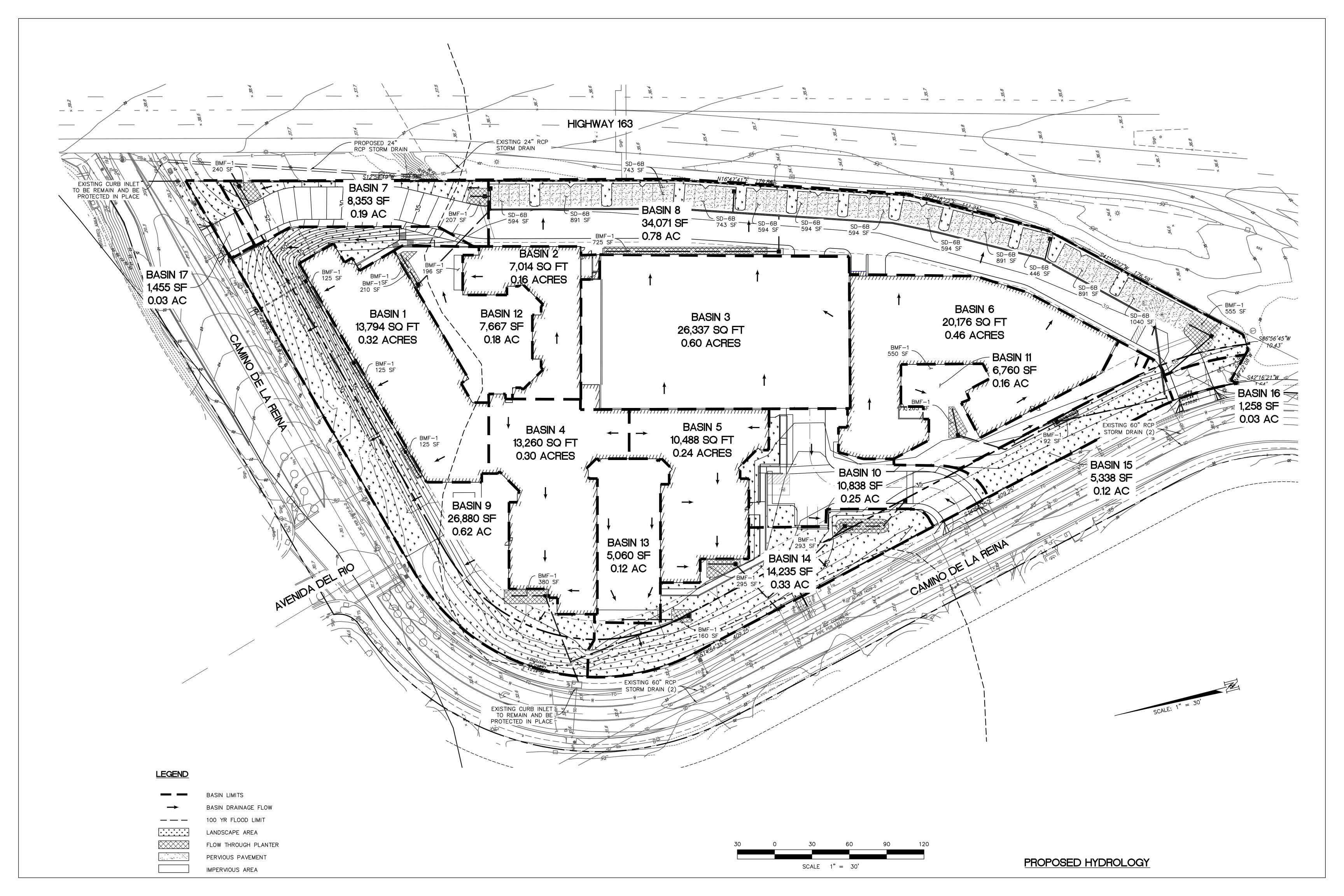
## APPENDIX A

## **Existing Hydrologic Conditions**



## APPENDIX B

## **Proposed Hydrologic Conditions**



## APPENDIX C

# **Hydrology References**

TABLE 2

RUNOFF COEFFICIENTS (RATIONAL METHOD)

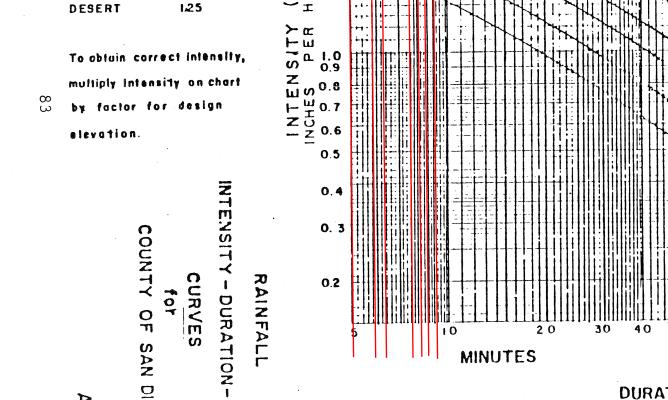
#### DEVELOPED AREAS (URBAN)

Land Use	Coefficient, C Soil Type (1)
Residential:	<u>D</u>
Single Family	.55
Multi-Units	.70
Mobile Homes	.65
Rural (lots greater than 1/2 acre)	.45
Commercial (2) 80% Impervious	.85
Industrial (2) 90% Impervious	<b>.</b> 95

#### NOTES:

- (1) Type D soil to be used for all areas.
- (2) Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in no case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

Actual imperviousness = 50%  
Tabulated imperviousness = 80%  
Revised C = 
$$\frac{50}{80}$$
 x 0.85 = 0.53



FACTOR

100

1.25

1.42

1.60

1.70

ELEV. 0-1500

500-3000 3000-4000

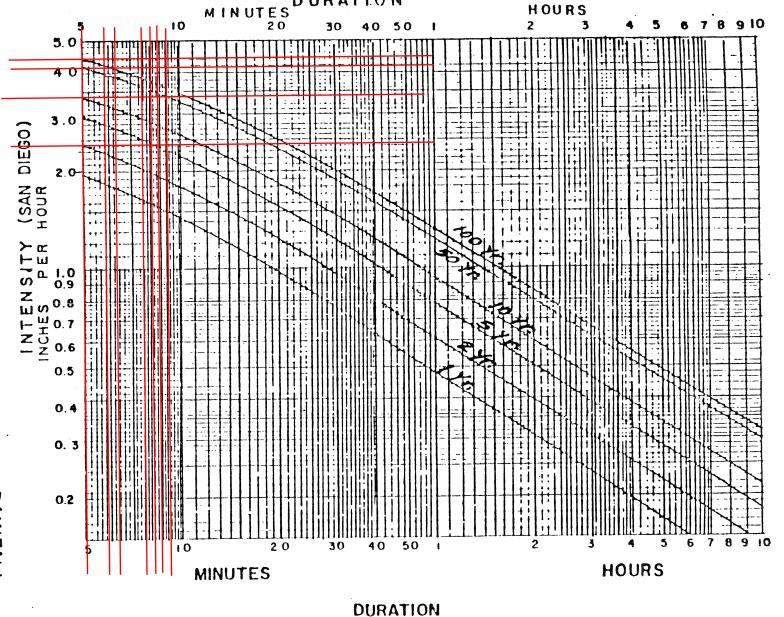
4000-5000

5000-6000

SAN DIEGO

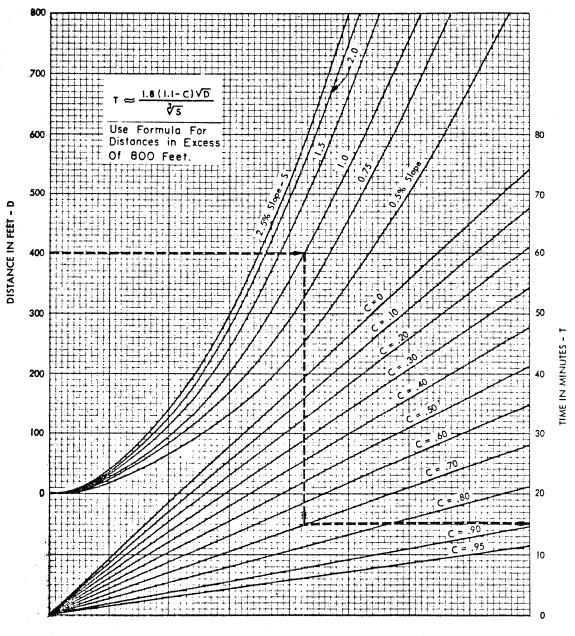
FREQUENCY

APPENDIX 1-1



**DURATION** 

# URBAN AREAS OVERLAND TIME OF FLOW CURVES



Surface Flow Time Curves

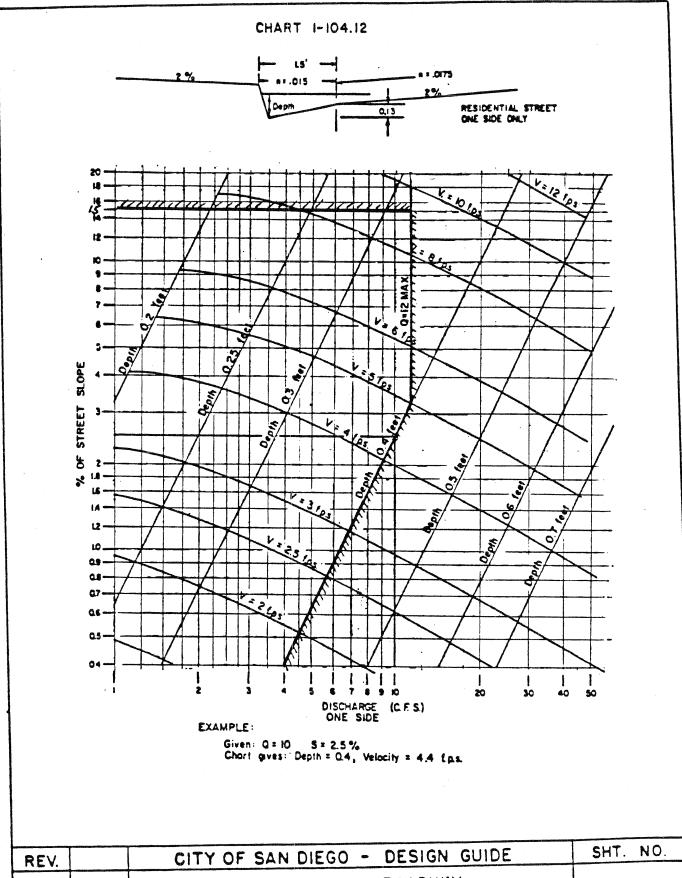
### EXAMPLE :

GIVEN: LENGTH OF FLOW = 400 FT.

SLOPE = 1.0 %

COEFFICIENT OF RUNOFF C = .70

READ: OVERLAND FLOWTIME = 15 MINUTES



REV.	CITY OF SAN DIEGO - DESIGN GUIDE	SHT. NO.
	GUTTER AND ROADWAY	
·	DISCHARGE - VELOCITY CHART	



#### October 24, 2016

Project No. 10949.001

Maple Multi-Family Land CA, LP c/o Trammel Crow Residential 5790 Fleet Street, Suite 140 Carlsbad, California 92008

Attention:

Mr. Tony Ditteaux

Subject:

Response to City of San Diego Cycle 8 LDR - Geology, Cycle Issues,

Trammel Crow Fashion Valley, Project Nbr. 474586, Review Dated

October 4, 2016.

In accordance with your request, we have prepared a response to the City of San Diego Cycle 8 LDR - Geology Cycle Issues for the proposed project, dated October 4, 2016. For clarity, the City of San Diego cycle issues are italicized and numbered in accordance with the order presented on the City's issues sheet. It should also be noted that issues addressed below are specific to the geotechnical aspects of the project and other issues for other disciplines are not addressed in this letter. Please consider this letter as an addendum to the referenced geotechnal report

#### Issue No. 15

Clarify if a factor-of-safety has been applied to the calculated infiltration rates in the report dated June 7, 2016 and on Worksheet C.4-1. Note: a factor-of-safety of 2 should be used for design phase projects.

#### Response to Issue No. 15

The original calculated infiltration rates did not have a factor-of-safety applied. Therefore we are providing below a revised table which includes the factor-of-safety.

Table 1 - Field Percolation Test Results

Perc. Test No.	Drilled Depth (ft)	Soil Type	Measured Percolation Rate (mins/in)	Calculated Infiltration Rate (inches/hr)	Recommended Infiltration Rate w/ FS of 2 (inches/hr)
P-1	15	Young Alluvial Deposits (Qya)	14.3	0.84	0.42
P-2	9	Young Alluvial Deposits (Qya)	27.8	0.38	0.19
P-3	2.5	Fill (Afu)	35.7	0.19	0.10
P-4	3	Fill (Afu)	41.7	0.18	0.09
P-5	3	Fill (Afu)	9.3	0.61	0.31

#### Issue No. 16

If geologic/ geotechnical conditions at the site are variable and different infiltration feasibility conditions are present, the project's geotechnical consultant could consider providing a C.4-1 worksheet for each DMA or group of DMAs.

#### Response to Issue No. 16

Based on our referenced geotechnical study and the close proximity of the San Diego River, we have considered the existing groundwater depth across the site in our current infiltration analysis. Therefore, it is our professional opinion that a portion of the site should be designated as No Infiltration per City BMP Design Manual Section C.3.2. In order to summarize the areal extent of the area where groundwater is 10 feet or less below the ground surface, we have provided an updated Figure 2 that delineates the area between No Infiltration conditions and Partial Infiltration Conditions. In addition, we have provided an updated worksheet C.4-1 for each area.



If you have any questions regarding this letter, please do not hesitate to contact this office. We appreciate this opportunity to be of service.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.

David B. Nevius, GE 2789 Associate Engineer



Attachments:

References

Figure 2 (revised)

Worksheets C.4-1 for Non Infiltration and Partial Infiltration

Distribution:

(1) Addressee



#### REFERENCES

- Leighton and Associates, 2016, Geotechnical Investigation, Fashion Valley, San Diego California, prepared for Maple Multi-Family Land CA, LP c/o Trammel Crow Residential, Project No. 10925.001, dated February 24, 2016.
- Leighton and Associates, 2016, Field Percolation Testing Letter Report, Fashion Valley, San Diego, California, Project No 10949.001, dated June 7, 2016.
- Leighton and Associates, 2016, Response to city of San Diego Cycle 1 LDR-Geology, Cycle Issues, Project Number 474586, and Review dated April 13, 2016, dated June 27, 2016
- Leighton and Associates, 2016, Response to city of San Diego Cycle 6 LDR-Geology, Cycle Issues, Project Number 474586, and Review dated August 1, 2016, dated August 30, 2016



Worksheet C.4-1 for Non Infiltration Area Worksheet C.4-1: Categorization of Infiltration Feasibility Condition

#### Categorization of Infiltration Feasibility Condition Worksheet C.4-1 Part 1 - Full Infiltration Feasibility Screening Criteria Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated? Criteria Screening Question Yes No Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour? The response to this Screening Question shall 1 X be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D. Provide basis:

Based upon the results of our field investigation, the existing groundwater table is 10 feet or less below the ground surface and as a result can not support full infiltration measures.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

 Can infiltration greater than 0.5 inches per hour be allowed without increasing	
risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to	
this Screening Question shall be based on a comprehensive evaluation of the	
factors presented in Appendix C.2.	

Provide basis:

No is answered above. Please note that in accordance with C-2 of the City of San Diego Storm Water Standards, 2016, it is not necessary to investigate each and every criterion in this worksheet. A single "No" answer in Part 1 precludes the feasibility of full infiltration.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.



Worksheet C.4-1 Page 2 of 4					
Criteria	Screening Question	Yes	No		
3	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.				

#### Provide basis:

No is answered above. Please note that in accordance with C-2 of the City of San Diego Storm Water Standards, 2016, it is not necessary to investigate each and every criterion in this worksheet. A single "No" answer in Part 1 and Part 2 precludes the feasibility of full infiltration.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	
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#### Provide basis:

No is answered above. Please note that in accordance with C-2 of the City of San Diego Storm Water Standards, 2016, it is not necessary to investigate each and every criterion in this worksheet. A single "No" answer in Part 1 and Part 2 precludes the feasibility of full infiltration.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

	If all answers to rows 1 - 4 are "Yes" a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration	
Part 1		
Result*	If any answer from row 1-4 is "No", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design.  Proceed to Part 2	

\*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.



Storm Water Standards Part 1: BMP Design Manual January 2016 Edition

# Worksheet C.4-1 Page 3 of 4 Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		Х

#### Provide basis:

Based upon the results of our field investigation, the existing groundwater table is 10 feet or less below the ground surface and as a result can not support infiltration measures.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

6	Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		
---	--	--	--

#### Provide basis:

No is answered above. Please note that in accordance with C-2 of the City of San Diego Storm Water Standards, 2016, it is not necessary to investigate each and every criterion in this worksheet. A single "No" answer in Part 1 and Part 2 precludes the feasibility of infiltration.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.



Worksheet C.4-1 Page 4 of 4					
Criteria	Screening Question	Yes	No		
7	Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.				

#### Provide basis:

No is answered above. Please note that in accordance with C-2 of the City of San Diego Storm Water Standards, 2016, it is not necessary to investigate each and every criterion in this worksheet. A single "No" answer in Part 1 and Part 2 precludes the feasibility of infiltration.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

V	Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive	
	evaluation of the factors presented in Appendix C.3.	

#### Provide basis:

No is answered above. Please note that in accordance with C-2 of the City of San Diego Storm Water Standards, 2016, it is not necessary to investigate each and every criterion in this worksheet. A single "No" answer in Part 1 and Part 2 precludes the feasibility of infiltration.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible.	
Part 2	The feasibility screening category is Partial Infiltration.	
Result*	If any answer from row 5-8 is no, then infiltration of any volume is considered to be	
	infeasible within the drainage area. The feasibility screening category is No Infiltration.	

\*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings



Worksheet C.4-1 for Partial Infiltration Area Worksheet C.4-1: Categorization of Infiltration Feasibility Condition

#### Categorization of Infiltration Feasibility Condition Worksheet C.4-1 Part 1 - Full Infiltration Feasibility Screening Criteria Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated? Criteria Screening Question Yes No Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour? The response to this Screening Question shall 1 X be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D. Provide basis:

Based upon the results of our field percolation tests and the resulting calculated infiltration rates using the Porchet Method and a Factor of Safety of 2.0, it is our opinion that the reliable infiltration rate of existing near surface soils across the site will typically be much lower than 0.5 inches per hour.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	2			
--	---	--	--	--

#### Provide basis:

No is answered above. Please note that in accordance with C-2 of the City of San Diego Storm Water Standards, 2016, it is not necessary to investigate each and every criterion in this worksheet. A single "No" answer in Part 1 precludes the feasibility of full infiltration.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.



Worksheet C.4-1 Page 2 of 4						
Criteria	Screening Question	Yes	No			
3	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.					

#### Provide basis:

No is answered above. Please note that in accordance with C-2 of the City of San Diego Storm Water Standards, 2016, it is not necessary to investigate each and every criterion in this worksheet. A single "No" answer in Part 1 and Part 2 precludes the feasibility of full infiltration.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	
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#### Provide basis:

No is answered above. Please note that in accordance with C-2 of the City of San Diego Storm Water Standards, 2016, it is not necessary to investigate each and every criterion in this worksheet. A single "No" answer in Part 1 and Part 2 precludes the feasibility of full infiltration.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

Part 1	If all answers to rows 1 - 4 are "Yes" a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration	
Result*	If any answer from row 1-4 is "No", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design.  Proceed to Part 2	

\*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.



#### Worksheet C.4-1 Page 3 of 4

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	iteria Screening Question		No
5	Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	Х	

#### Provide basis:

Based upon the results of our field percolation tests and the resulting calculated infiltration rates using the Porchet Method and a Factor of Safety of 2.0, it is our opinion that the reliable infiltration rate of existing near surface soils across the site will typically be much lower than 0.5 inches per hour. However, it should be noted that infiltration rates across the site are considered appropriate for a partial-infiltration designation. The designer of the onsite stormwater system should consider the variable results above and use engineering judgement in developing an appropriate system.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

6	Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	x	
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#### Provide basis:

Yes, there are no geotechnical hazards at the site that cannot be mitigated to an acceptable level, refer to Field Percolation Testing Letter Report. Specifically, our letter provides recommendations regarding setbacks that should be followed for BMP design.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.



Worksheet C.4-1 Page 4 of 4							
Criteria	Screening Question	Yes	No				
7	Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	x					

#### Provide basis:

Infiltration can be allowed without posing a significant risk for groundwater related concerns. The BMPs have been designed to maintain the recommended distance away from the groundwater table.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

	8	Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	x	
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#### Provide basis:

Infiltration can be allowed without causing potential water balance issues because the groundwater basin is much larger than the project's drainage area. The infiltration will not significantly change the existing condition of the San Diego River groundwater basin. The bottom of the infiltration gallery is sufficiently high enough to satisfy the minimum seasonal high groundwater elevation in order to protect groundwater quality.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible.	
Part 2	The feasibility screening category is Partial Infiltration.	
Result*	If any answer from row 5-8 is no, then infiltration of any volume is considered to be	
	infeasible within the drainage area. The feasibility screening category is No Infiltration.	

\*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings



#### **ATTACHMENT 6**

#### Geotechnical and Groundwater Investigation Report

Attach project's geotechnical and groundwater investigation report. Refer to Appendix C.4 to determine the reporting requirements.





June 7, 2016

Project No. 10949.001

Maple Multi-Family Land CA, LP c/o Trammel Crow Residential 5790 Fleet Street, Suite 140 Carlsbad, California 92008

**Attention:** Mr. Lawrence Howard

Subject: Field Percolation Testing Letter Report

Fashion Valley

San Diego, California

#### <u>Introduction</u>

In accordance with your request and authorization, Leighton and Associates, Inc. (Leighton) has performed field percolation testing for the subject site located 123 Camino De La Reina in the Fashion Valley neighborhood of San Diego, California (Figure 1, rear of text). The purpose of our study was to evaluate the feasibility of introducing stormwater runoff within the project boundaries to the subsurface soils. In-situ percolation testing was performed in general accordance with Appendix C in the City of San Diego Storm Water Standards Manual (City of San Diego, 2016) and County of San Diego Standards (County of San Diego, 2013). In addition, Leighton has previously prepared a geotechnical investigation (Leighton, 2016) for the subject site. This letter report provides our findings including field exploration, testing procedures, measured percolation rates, and calculated infiltration rates for each test location.

#### **Scope of Services**

The purpose of our study was to determine subsurface soil and groundwater characteristics and to provide percolation rates to aid in the preliminary design of onsite stormwater infiltration systems. The scope of work included the following tasks:

- <u>Background Review</u> Reviewed Appendix C in the City of San Diego Storm Water Standards Manual (City of San Diego, 2016). We also reviewed available geotechnical literature pertinent to the subject site including previous geotechnical reports;
- <u>Pre-Field Exploration Activities</u> Percolation test boring locations were marked and Underground Service Alert (USA) was notified to locate and mark existing underground utilities prior to our subsurface exploration;
- <u>Field Exploration</u> Our field exploration was performed between May 16<sup>th</sup> and May 17<sup>th</sup>, 2016 and consisted of advancing 2 hollow-stem auger borings (P-1 and P-2) to depths between 9 and 15 feet below the existing ground surface (bgs). In addition, 3 hand auger borings (P-3 through P-5) were advanced to depths between 1½ to 3 feet bgs. The approximate percolation test boring locations are shown on the Percolation Test Location Map (Figure 2, rear of text). After advancement, each percolation test boring location was presoaked with approximately 1.5 feet of water and was allowed to pre-soak for a minimum of 15 hours prior to performing the insitu percolation testing;
- <u>Field Percolation Tests</u> In-situ percolation testing was performed in accordance with County of San Diego Standards (County of San Diego, 2013) on May 17<sup>th</sup> through May 18<sup>th</sup>, 2016. After an overnight pre-soak period, the bottom of the percolation test boring locations were filled with approximately 2-inches of ¾-inch crushed rock and filled with approximately 8 to 12 inches of water. The water level in each percolation test boring location was then generally measured at 10 and 30 minute intervals using a water level sounder. After the conclusion of in-situ percolation testing, all percolation test boring locations were backfilled with soil cuttings and capped to match pre-existing surface conditions; and
- <u>Report Preparation</u> The results of the exploration, in-situ percolation testing and calculated infiltration test results are summarized in this letter report presenting our findings.



#### **Subsurface Conditions**

Based on our review of the previous studies for the site (Leighton, 2016) and our current investigation, the geologic units underlying the site consist of undocumented artificial fill soils, Quaternary-aged Young Alluvial Flood-Plain Deposits, and the Tertiary-aged Friars Formation.

Undocumented artificial fill soils were encountered within all percolation test locations during our current exploration and extended to a depth of 7 feet bgs. These fill soils generally consisted of reddish brown to medium brown, moist, medium dense, clayey and silty sands with scattered gravel and some debris such as brick and glass. In addition, Quaternary-aged Young Alluvial Flood-Plain Deposits were encountered directly below the undocumented fill soils in percolation test locations P-1 and P-2. These deposits extended to the maximum depth explored of 15 feet bgs. These deposits primarily consist of interbedded layers of gray-brown to dark brown, friable, medium dense, poorly graded sand with silt.

#### <u>Groundwater</u>

No indications of seeps or surface water were observed during our current site investigation. However, based on our previous geotechnical investigation (Leighton, 2016), groundwater was observed in our exploration borings at a depth between approximately 8 to 21 feet bgs; i.e. 17 to 20 feet above mean sea level (msl). It should be noted that perched groundwater levels may develop and fluctuate during periods of precipitation or increased landscape irrigation.

#### **Percolation Rates**

Based on our field percolation testing, the in-situ percolation rates and calculated infiltration rates at tested locations and depths are summarized in Table 1 below. The percolation test locations are shown on the Percolation Test Location Map (Figure 2, rear of text). Field data and calculated percolation rate for each percolation test location is presented in Appendix B.



Table 1 - Field Percolation Test Results

Perc Test No.	Drilled Depth (ft)	Soil Type	Measured Percolation Rate (mins/in)	Measured Percolation Rate (inches/hr)	Calculated Infiltration Rate (inches/hr)
P-1	15	Young Alluvial Deposits (Qya)	14.3	4.2	0.84
P-2	9	Young Alluvial Deposits (Qya)	27.8	2.2	0.38
P-3	2.5	Fill (Afu)	35.7	1.7	0.19
P-4	3	Fill (Afu)	41.7	1.4	0.18
P-5	3	Fill (Afu)	9.3	6.5	0.61

It should be emphasized that the percolation test results are only representative of the tested location and depth where they are performed. Varying subsurface conditions will exist outside of the test location, which could alter the measured percolation rate or calculated infiltration rate indicated above. In addition, it is important to note that percolation rates are not equal to infiltration rates. As a result, we have made a distinction between percolation rates where water movement is considered laterally and vertically versus infiltration rates where only the vertical direction is considered. We have used the Porchet Method to convert measured percolation rates to calculated infiltration rates in accordance with County of Riverside Standards (2011).

It is possible that the long term rate of transmissivity of permeable soil strata may be much lower than the values obtained by testing. This could be influenced by: the highly variable vertical character and limited lateral extent of the more permeable soil strata, reduction of permeability rates over time due to silting of the soil pore spaces, and other factors. Accordingly, the possibility of future surface ponding of water as well as shallow groundwater impacts on subterranean structures such as basements, underground utilities, etc. should be anticipated as possible future conditions in all design aspects of the site.

#### **Recommendations and Conclusions**

Based on the results of our subsurface exploration and field percolation testing, it is Leighton's opinion that the practice of surface water infiltration into near surface soils is feasible at the subject site where calculated infiltration rates were higher than 0.5 inches per hour. However, it should be noted that subsurface soils with a calculated infiltration rate of less than 0.5 inches per hour exists at the subject site. The designer of the onsite stormwater infiltration system should consider the variable results above and use



engineering judgment in developing an appropriate system. Also, it is our opinion that additional percolation testing be performed upon completion of final grading at the proposed locations of infiltration devices.

Considering the variance in materials encountered in our borings at the subject site, a factor of safety should applied to the above measured percolation rates and calculated infiltration rates to be used for BMP design. It should be noted that the above rates represent stabilized values and that these rates may degrade over time due to complete saturation of underlying soils, and fines build-up and plugging if pre-treatment and maintenance of the storm water device is not performed. As such, the selected percolation or infiltration rates should be reduced by a factor of safety determined by the design engineer to establish a conservative design rate for the service life of the proposed system.

In addition, we recommend setbacks for stormwater infiltration devices as summarized in the table below:

Table 2 – Stormwater Infiltration System Setbacks (measured from bottom of infiltration device)

Setback from	Distance
Any foundation	No closer than a 1:1 plane drawn away from the bottom of foundation
Face of any slope	H/2, 5 feet minimum (H is height of slope)

Note that foundation and subsurface improvements (e.g., basements) of residential structures located adjacent to proposed infiltration systems should be evaluated to ensure that they may not be adversely impacted from infiltration of surface water. Where setbacks cannot be attained a 30-mil impermeable liner should be placed along the sides and bottom of the infiltration basins.

Also, surface drainage should be controlled at all times and carefully taken into consideration during precise grading, landscaping, and construction of site improvements. Positive drainage (e.g., roof gutters, downspouts, area drains, etc.) should be provided to direct surface water away from structures and improvements and towards the street or suitable drainage devices. Ponding of water adjacent to structures or pavements should be avoided. Roof gutters, downspouts, and area drains should be aligned so as to transport surface water to a minimum distance of 5 feet away from structures. The performance of



structural foundations is dependent upon maintaining adequate surface drainage away from structures.

Water should be transported off the site in approved drainage devices or unobstructed swales. We recommend a minimum flow gradient for unpaved drainage within 5 feet of structures of 2 percent sloping away. All area drain inlets should be maintained and kept clear of debris in order to function properly. In addition, landscaping should not cause any obstruction to site drainage. Rerouting of drainage patterns and/or installation of area drains should be performed, if necessary, by a qualified civil engineer or a landscape architect.

#### Limitations

This letter report was based on data obtained from limited number of observations, site visits, soil excavations, samples, and tests. Such information is, by necessity, incomplete. The nature of many sites is such that differing soil or geologic conditions can be present within small distances and under varying climatic conditions. Changes in subsurface conditions can and do occur over time. In addition, changes made during design development and construction, should be reviewed by Leighton to determine if recommendations are still applicable. Please also note that the evaluation in this letter report was limited to assessment of the geotechnical aspects of the project, and did not include evaluation of structural design.



If you have any questions regarding our report, please do not hesitate to contact this office. We appreciate this opportunity to be of service.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC



Robert C. Stroh, CEG 2099 Associate Engineering Geologist

Extension: 4090, <a href="mailto:rstroh@leightongroup.com">rstroh@leightongroup.com</a>

David B. Nevius, GE 2789 Associate Engineer

Extension: 8484, dnevius@leightongroup.com

Distribution (1): Addressee

#### Attachments:

Figure 1- Site Location Map

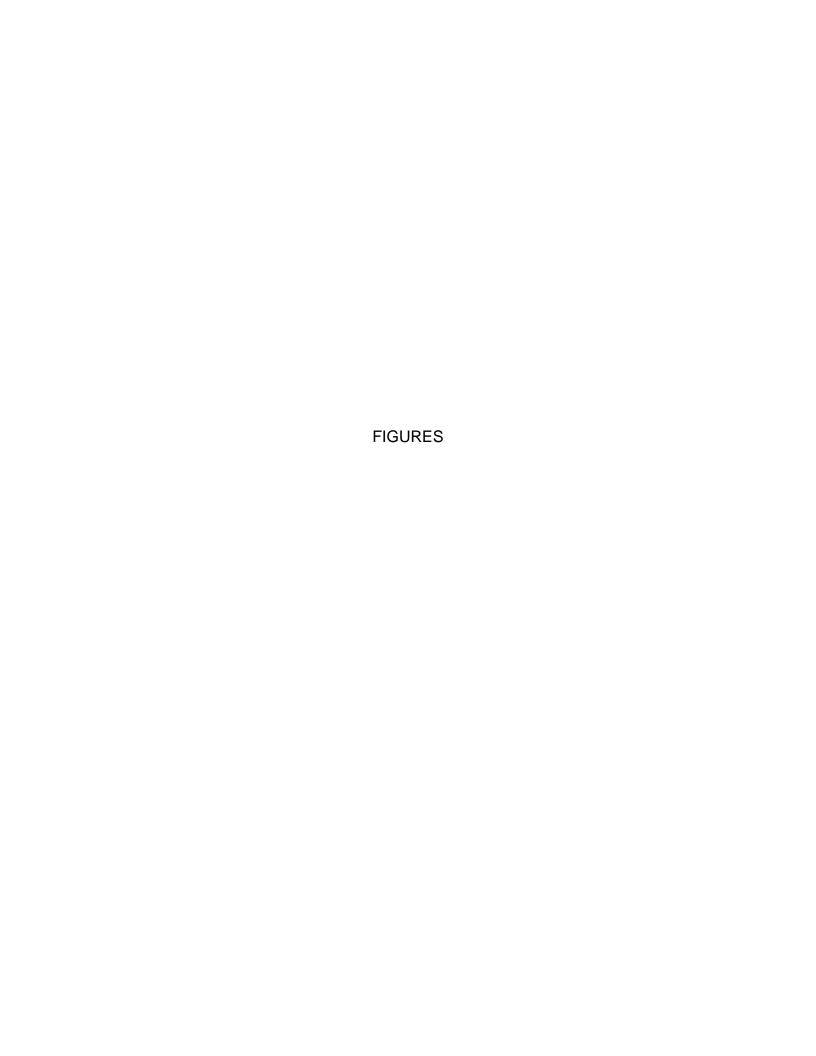
Figure 2- Percolation Test Location Map

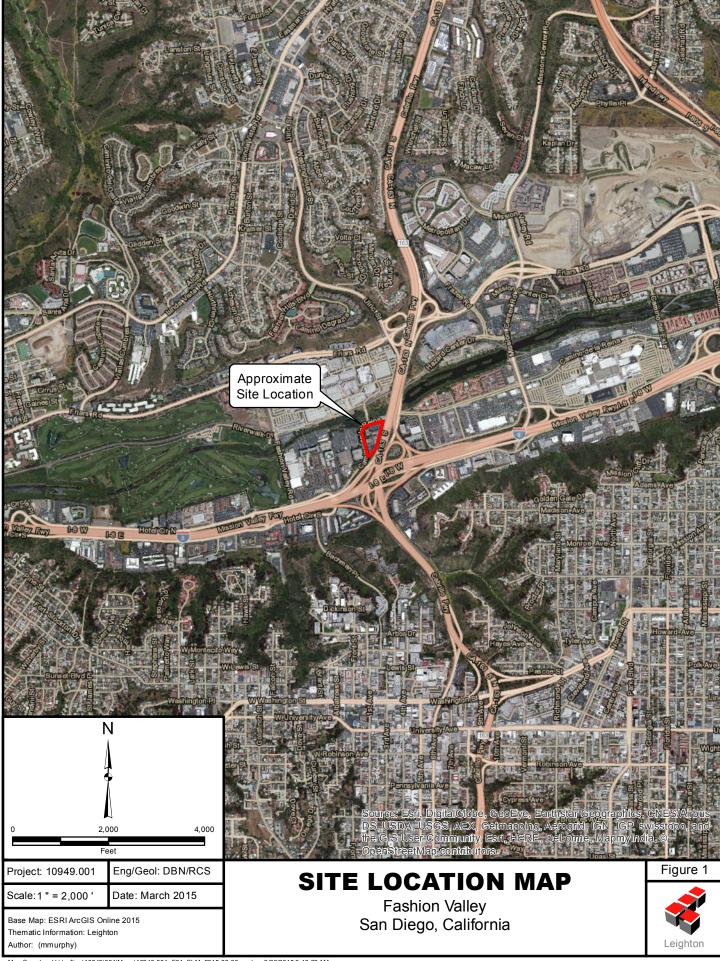
Appendix A - References

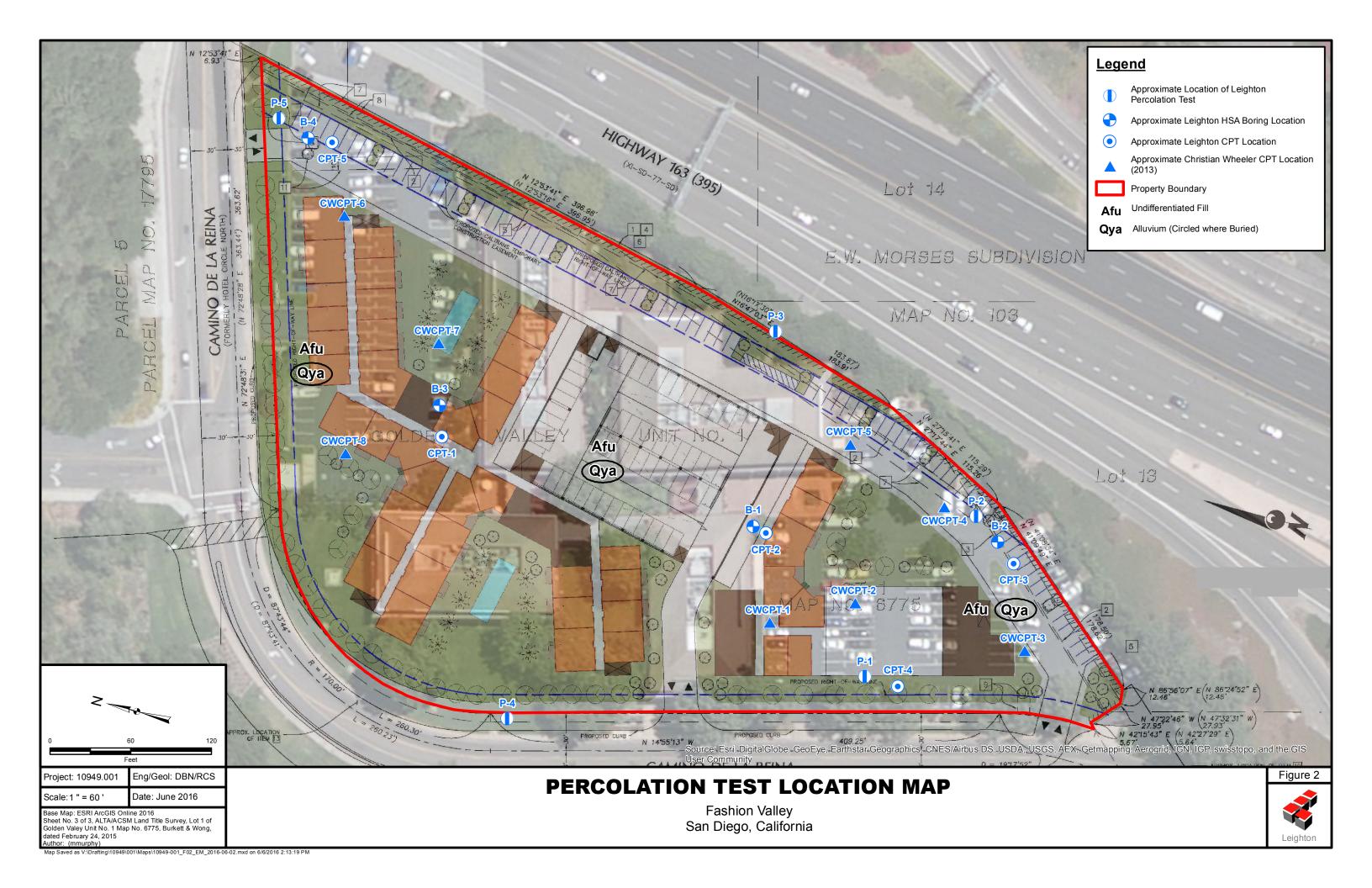
Appendix B - Field Percolation Test Results

Appendix C - City of San Diego Geotechnical / Groundwater Investigation Requirements









APPENDIX A REFERENCES

#### APPENDIX A

#### References

- City of San Diego Storm Water Standards, Part 1: BMP Design Manual Appendix C Geotechnical and Groundwater Investigation Requirements, dated January 2016.
- County of San Diego Department of Environmental Health Land and Water Quality Division, Design Manual for Onsite Wastewater Treatment Systems, March 22, 2010 Edition (Updated November 25, 2013).
- County of Riverside Riverside County Flood Control and Water Conservation District Low Impact Development BMP Design Handbook, Appendix A, (Revised September, 2011).
- Leighton and Associates, 2016, Geotechnical Investigation, Fashion Valley, San Diego, California, Project No. 10949.001, dated February 24, 2016.

# APPENDIX B FIELD PERCOLATION TEST RESULTS



## FIELD PERCOLATION TEST DATA SHEET

Project Name: Fashion Valley Project No.: 10949.001

Proj. Address: 123 Camino De La Reina, San Diego, California

#### SOIL TYPE / TEST LOCATION / BOREHOLE

Soil Type: Young Alluvial Deposits (Qya) - Poorly Graded Sand with Silt (SP-SM)

Location: P-1

Hole Dia: 8"

Depth 15'

Tested by: ERB Pre-Saturation Date: 5-16-16 Test Date: 5-17-16

Notes: Measurements in Inches (in)

Time of Day	Interval / Notes	Initial Depth to Water (in)	Final Depth of Water (in)	Δ in Water Level (in.)	Percolation Rate (min/inch)
5:15	Started Perc Test	168	n/a	n/a	n/a
5:25	1st 10 min Reading	168	173.28	5.28	1.89
5:35	2nd 10 min Reading	173.28	175.68	2.4	4.17
5:45	Refilled H20 / 3rd 10 min Reading	168	169.68	1.68	5.95
5:55	4th 10 min Reading	169.68	170.52	0.84	11.9
6:06	5th Reading - 11 minutes	170.52	171.6	1.08	10.18
6:18	6th Reading - 12 minutes	171.6	172.44	0.84	14.28

Notes: 14.3 min/inch or 4.2 inch/hour

Last Test Reading Used to Detmine Percolation Rate



Project Name: Fashion Valley Project No.: 10949.001

Proj. Address: 123 Camino De La Reina, San Diego, California

#### SOIL TYPE / TEST LOCATION / BOREHOLE

Soil Type: Young Alluvial Deposits (Qya) - Poorly Graded Sand with Silt (SP-SM)

Location: P-2

Hole Dia: 8"

Depth 9'

Tested by: ERB Pre-Saturation Date: 5-16-16 Test Date: 5-17-16

Notes: Measurements in Inches (in)

Time of Day	Interval / Notes	Initial Depth to Water (in)	Final Depth of Water (in)	Δ in Water Level (in.)	Percolation Rate (min/inch)
5:19	Started Perc Test	96	n/a	n/a	n/a
5:29	1st 10 min Reading	96	95.52	0.48	20.83
5:39	2nd 10 min Reading	96.48	96.99	0.51	19.6
5:49	Refilled H20 / 3rd 10 min Reading	96	96.69	0.69	14.49
6:02	4th Reading - 13 minutes	96.69	97.41	0.72	18.05
6:12	5th 10 min Reading	97.41	97.89	0.48	20.83
6:21	6th Reading - 9 minutes	97.89	98.13	0.24	37.5
6:31	7th 10 min Reading	98.13	98.46	0.33	30.3
6:41	8th 10 min Reading	98.46	98.82	0.36	27.77

Notes: 27.8 min/inch or 2.2 inch/hour



Project Name: Fashion Valley Project No.: 10949.001

Proj. Address: 123 Camino De La Reina, San Diego, California

#### SOIL TYPE / TEST LOCATION / BOREHOLE

Soil Type: Undocumented Artificial Fill (Afd) - Clayey Sand (SC)

Location: P-3

Hole Dia: 3.5"

Depth 2.5'

Tested by: ERB Pre-Saturation Date: 5-17-16 Test Date: 5-18-16

Notes: Measurements in Inches (in)

Time of Day	Interval / Notes	Initial Depth to Water (in)	Final Depth of Water (in)	Δ in Water Level (in.)	Percolation Rate (min/inch)
1:24	Started Perc Test	22	n/a	n/a	n/a
1:54	1st 30 min Reading	22	25.48	3.48	8.62
2:24	2nd 30 min Reading	25.48	26.8	1.32	22.72
2:54	Refilled H20 / 3rd 30 min Reading	22	23.32	1.32	22.72
3:24	4th 30 min Reading	23.32	24.04	0.72	41.66
3:54	5th 30 min Reading	24.04	24.88	0.84	35.71
4:24	6th 30 min Reading	24.88	25.84	0.96	31.25
4:54	Refill H20 / 7th 30 min Reading	22	22.6	0.6	50
5:24	8th 30 min Reading	22.6	23.44	0.84	35.71

Notes: 35.7 min/inch or 1.7 inch/hour



Project Name: Fashion Valley Project No.: 10949.001

Proj. Address: 123 Camino De La Reina, San Diego, California

#### SOIL TYPE / TEST LOCATION / BOREHOLE

Soil Type: Undocumented Artificial Fill (Afd) - Clayey Sand (SC)

Location: P-4

Hole Dia: 3.5"

Depth 1.5'

Tested by: ERB Pre-Saturation Date: 5-17-16 Test Date: 5-18-16

Notes: Measurements in Inches (in)

Time of Day	Interval / Notes	Initial Depth to Water (in)	Final Depth of Water (in)	Δ in Water Level (in.)	Percolation Rate (min/inch)
1:44	Started Perc Test	10	n/a	n/a	n/a
2:14	1st 30 min Reading	10	11.32	1.32	22.72
2:44	2nd 30 min Reading	11.32	12.04	0.72	41.66
3:14	3rd 30 min Reading	12.04	13.12	1.08	27.77
3:44	Refilled H20 / 4th 30 min Reading	10	10.72	0.72	41.66
4:14	5th 30 min Reading	10.72	11.44	0.72	41.66
4:44	6th 30 min Reading	11.44	12.16	0.72	41.66

Notes: 41.7 min/inch or 1.4 inch/hour



Project Name: Fashion Valley Project No.: 10949.001

Proj. Address: 123 Camino De La Reina, San Diego, California

#### SOIL TYPE / TEST LOCATION / BOREHOLE

Soil Type: Undocumented Artificial Fill (Afd) - Silty Sand (SM)

Location: P-5

Hole Dia: 3.5"

Depth 3'

Tested by: ERB Pre-Saturation Date: 5-17-16 Test Date: 5-18-16

Notes: Measurements in Inches (in)

Time of Day	Interval / Notes	Initial Depth to Water (in)	Final Depth of Water (in)	Δ in Water Level (in.)	Percolation Rate (min/inch)
1:52	Started Perc Test	26	n/a	n/a	n/a
2:22	Refilled H20 / 1st 30 min Reading	26	31.04	5.04	5.95
2:52	Refilled H20 / 2nd 30 min Reading	26	31.4	5.4	5.55
3:22	Refilled H20 / 3rd 30 min Reading	26	29.12	3.12	9.61
3:52	Refilled H20 / 4th 30 min Reading	26	29.6	3.6	8.33
4:22	5th 30 min Reading	29.6	32.24	2.64	11.36
4:52	Refilled H20 / 6th 30 min Reading	26	29.48	3.48	8.62
5:22	Refilled H20 / 7th 30 min Reading	26	29.36	3.36	8.92
5:52	Refilled H20 / 8th 30 min Reading	26	29.24	3.24	9.25

Notes: 9.3 min/inch or 6.5 inch/hour

# APPENDIX C CITY OF SAN DIEGO GEOTECHNICAL / GROUNDWATER INVESTIGATION REQUIREMENTS

Worksheet C.4-1: Categorization of Infiltration Feasibility Condition

541050	rization of Infiltration Feasibility Condition Worksheet C.4-1				
Part 1 - Full Infiltration Feasibility Screening Criteria Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?					
Criteria	Screening Question	Yes	No		
1	Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	х			
Provide l	basis: n the results of our subsurface exploration and field percolation testing, it is our				
	n rates were higher than 0.5 inches per hour. However, it should be noted that				
designer engineer percolatio	n a calculated infiltration rate of less than 0.5 inches per hour exists at the subject of the onsite stormwater infiltration system should consider the variable results ring judgement in developing and appropriate system. Also, it is our opinion that on testing be performed upon completion of ground improvements and final graded locations of infiltration devices.	above a addition	nd use nal		
designer engineer percolation proposed Summari	of the onsite stormwater infiltration system should consider the variable results ing judgement in developing and appropriate system. Also, it is our opinion that on testing be performed upon completion of ground improvements and final grad	above a additior	nd use nal ne		

Yes, refer to Field Percolation Testing Letter Report.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.



Worksheet C.4-1 Page 2 of 4					
Criteria	Screening Question	Yes	No		
3	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	x			

Provide basis:

Refer to the designer of the onsite stormwater infiltration system and civil engineer for the answer to Criteria 3.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

4	Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	x

Provide basis:

Refer to the designer of the onsite stormwater infiltration system and civil engineer for the answer to Criteria 4.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.

	If all answers to rows 1 - 4 are "Yes" a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration	
Part 1		
Result*	If any answer from row 1-4 is "No", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design.  Proceed to Part 2	

<sup>\*</sup>To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.



#### Worksheet C.4-1 Page 3 of 4

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	X	

#### Provide basis:

Based on the results of our subsurface exploration and field percolation testing, it is our opinion that the practice of surface water infiltration into near surface soils is feasible at the subject site where calculated infiltration rates were higher than 0.5 inches per hour. However, it should be noted that subsurface soils with a calculated infiltration rate of less than 0.5 inches per hour exists at the subject site. The designer of the onsite stormwater infiltration system should consider the variable results above and use engineering judgement in developing and appropriate system. Also, it is our opinion that additional percolation testing be performed upon completion of ground improvements and final grading at the proposed locations of infiltration devices.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

6	Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	x	

#### Provide basis:

Yes, refer to Field Percolation Testing Letter Report.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.



Worksheet C.4-1 Page 4 of 4					
Criteria	Screening Question	Yes	No		
7	Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	х			
Provide basis:					

Refer to the designer of the onsite stormwater infiltration system and civil engineer for the answer to Criteria 7.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

8	Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	x	
---	---	---	--

Provide basis:

Refer to the designer of the onsite stormwater infiltration system and civil engineer for the answer to Criteria 8.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible.	
Part 2	The feasibility screening category is Partial Infiltration.	
Result*	If any answer from row 5-8 is no, then infiltration of any volume is considered to be	
	infeasible within the drainage area. The feasibility screening category is No Infiltration.	

<sup>\*</sup>To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings



### GEOTECHNICAL INVESTIGATION FASHION VALLEY SAN DIEGO, CALIFORNIA

#### Prepared for:

# Maple Multi-Family Land CA, LP c/o Trammell Crow Residential

5790 Fleet Street, Suite 140 Carlsbad, California 92008

Project No. 10949.001

February 24, 2016



Leighton and Associates, Inc.

A LEIGHTON GROUP COMPANY



February 24, 2016

Project No. 10949.001

Maple Multi-Family Land CA, LP c/o Trammel Crow Residential 5790 Fleet Street, Suite 140 Carlsbad, California 92008

Attention: Mr. Lawrence Howard

Subject: Geotechnical Investigation

Fashion Valley, San Diego, California

In accordance with your request and authorization, we have conducted a geotechnical investigation of the property for the design and construction of the proposed residential development project.

Based on the results of our study, it is our professional opinion that the site is suitable to receive the proposed improvements provided mitigation of the underlying liquefiable soils is implemented prior to construction. The accompanying report presents a summary of our investigation and provides geotechnical conclusions and recommendations relative to the proposed site development.

If you have any questions regarding our report, please do not hesitate to contact this office. We appreciate this opportunity to be of service.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC

Bob Stroh, CEG 2099 Senior Project Geologist

Distribution: (1) Addressee

David Nevius, GE 2789 Associate Engineer

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APPENDIX E – GENERAL EARTHWORK AND GRADING SPECIFICATIONS FOR ROUGH GRADING



# Important Information about Your

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

#### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared solely for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. And no one — not even you — should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

#### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

#### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are Not Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

## A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

#### **Do Not Redraw the Engineer's Logs**

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.* 

## Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

#### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

#### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else*.

#### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

#### Rely on Your ASFE-Member Geotechnical Engineer for Additional Assistance

Membership in ASFE/The Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



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#### 1.0 INTRODUCTION

We recommend that all individuals utilizing this report read the preceding information sheet prepared by ASFE (the Association of Engineering Firms Practicing in the Geosciences) and the Limitations, Section 7.0, located at the end of this report.

#### 1.1 Purpose and Scope

This report presents the results of our geotechnical investigation for the site located at 123 Camino De La Reina in the City of San Diego, California (Figure 1). The intent of this report is to provide specific geotechnical conclusions and recommendations for the currently proposed project.

#### 1.2 Site Location and Description

The site is located northwest of Highway 163 and south and east of Camino De La Reina in the Fashion Valley neighborhood of San Diego, California (Figure 1). The site is currently utilized as a business park with 4 existing structures and pavement parking areas with associated drive aisles.

The site is roughly triangular shaped with the long axis oriented north-south along Camino De La Reina and with the diagonal along the southeast side of the property which is bound by Highway 163. The site is approximately 5 acres in area. The San Diego River is located approximately 200 feet north of the site and a commercial property currently consisting of the San Diego Union Tribune building is located west of the site.

Site elevations vary between 26 feet above mean sea level (msl) and 40 feet msl with topography across the site gently sloping away from the center of the property toward the north, west, and south.

<u>Site Latitude and Longitude</u> 32.765° N

117.164° W



#### 1.3 Proposed Development

Based on our review of the preliminary site plan (DesignARC, 2016), we understand that the project will consist of demolition of the existing site improvements and replacement with a multi-building, multi-story residential project. Specifically, development is currently proposed to include three 6-story, Type III apartment structures with approximately 284 units and an associated 6-story parking garage. The ground floor of one of the residential structures will likely consist of Retail/Leasing with the remaining upper floors consisting of residential units. In addition, the plans indicate an asphalt concrete paved surface access roadways from the north, west, and southwest off Camino De La Reina and surface parking along the east side of the property adjacent to Highway 163. Other surface improvements may include two swimming pools with associated patio/common areas.



#### 2.0 SUBSURFACE EXPLORATION AND LABORATORY TESTING

#### 2.1 <u>Current Site Investigation</u>

Our subsurface exploration of the site was performed on February 25, 2015, and consisted of advancing four small diameter, hollow-stem-auger, exploratory borings, with a conventional truck mounted, CME-75, drilling rig. The exploratory borings (B-1 through B-4) were advanced to characterize the onsite soils, including those likely to be encountered at and below the proposed foundation elevations for this project. In addition, we advanced five cone penetration tests (CPTs) to further characterize the onsite soils for the purpose of evaluating liquefaction potential. Depths of exploration for the CPTs ranged between 60 and 82 feet. The approximate locations of the borings and CPTs are presented on the Boring Location Map (Figure 2) and the boring logs and CPT profiles are presented in Appendix B.

A geologist from our firm visually logged the soil types encountered in accordance to ASTM D2488. Soil samples were obtained using either a SPT sampler (2-inch O.D. and 1.4-inch I.D.) or a California Modified sampler (3-inch O.D. and 2.4-inch I.D.) with 1-inch tall sample rings. The samplers were driven into the subsurface soils using a 140 pound automated hammer vertically dropping 30 inches. Soil samples of bulk and relatively undisturbed in-situ samples were packaged, sealed, and transported to our laboratory for physical analysis. Blow counts were recorded at 6-inch intervals for each sample, except where sampler refusal was encountered at a lesser increment (greater than 50 blows per 6 inches). A discussion of the laboratory test program and a summary of the laboratory test results are presented in Appendix C. After logging and sampling, the exploratory borings were backfilled with native soil and, where appropriate, were resurfaced with concrete patch.

The blow counts recorded on the boring logs represent the raw field data and have not been corrected for the effects of overburden pressure, rod effects, borehole diameter, variation in sampler size, or hammer energy correction. Soil samples obtained from the borings were packaged and sealed in the field to reduce moisture loss and disturbance, and returned to our San Diego laboratory for further testing.



#### 2.2 Previous Site Investigation

As part of our study, we reviewed one study pertinent to the subject site. Specifically, we reviewed a report by Christian Wheeler Engineering titled Preliminary Geotechnical Evaluation, dated November 21, 2013.

The scope of services for that report included the completion of a field exploration program that included the completion of eight CPT explorations across the site parking lots. CPT soundings from that study are shown on Figure 2 and are presented in Appendix B. It should be noted that we concur with the results of their CPT explorations and have utilized that data in completing our recommendations and analysis for this report.

#### 2.3 <u>Laboratory Testing</u>

Laboratory testing was performed on soil samples to evaluate particle size and distribution, maximum bulk density and optimum moisture content, in-situ moisture and density, and direct shear. A discussion of the laboratory tests performed and a summary of the laboratory test results are presented in Appendix C.



#### 3.0 SUMMARY OF GEOTECHNICAL CONDITIONS

#### 3.1 Regional Geologic Setting

The project area is situated in the Peninsular Ranges Geomorphic Province of California. This geomorphic province encompasses an area that extends approximately 900 miles from the Transverse Ranges and the Los Angeles Basin south to the southern tip of Baja California, and varies in width from approximately 30 to 100 miles (Norris and Webb, 1990). The province is characterized by mountainous terrain on the east composed mostly of Mesozoic igneous and metamorphic rocks, and relatively low-lying coastal terraces to the west underlain by late Cretaceous-age, Tertiary-age, and Quaternary-age sedimentary units. Most of the coastal region of the County of San Diego, including the site, occurs within this coastal region and is underlain by sedimentary units. More locally, the site generally consists of subdued landforms underlain by sedimentary bedrock.

#### 3.2 Site-Specific Geology

Based on our subsurface exploration and review of geologic literature and maps (Appendix A), the geologic units underlying the site consist of localized undocumented artificial fill overlying surficial alluvial floodplain deposits (Quaternary-aged Young Alluvial Floodplain Deposits) in turn underlain by Tertiary-age Friars Formation. Although the Friars Formation was not encountered during exploration drilling it is believed to have been encountered in CPT-1 at a depth of approximately 75 feet (Figure 2). A brief description of the geologic units encountered on the site is presented below.

#### 3.2.1 Undocumented Fill – (Afu)

During our subsurface exploration, on the order of up to approximately 10 to 11 feet of undocumented artificial fill soil was encountered at the exploration locations. In general, based on previously completed explorations and the recent explorations, undocumented fill averages approximately 10 feet in thickness across the site, and thins towards the north, west and south. The fill was apparently placed during the site's initial construction and deeper fills may exist that were not observed during our or the previous exploration. An as-graded report was not available for our review, and it is assumed that no engineering



observations of these fill soils were provided at the time of grading. As encountered, the fill soils generally consisted of reddish brown to medium brown, moist, medium dense, clayey to silty sand with scattered gravel and some debris such as brick and glass.

#### 3.2.2 Quaternary Young Alluvial Flood-Plain Deposits (Qya)

Quaternary-aged Young Alluvial Flood-Plain Deposits underlie the site. As encountered, young alluvial flood-plain deposits underlay the fill and consist of materials that range from silty sand to sandy silt; and silts to clays. At one location, the alluvium immediately underlying the fill contained abundant organics. The base of the alluvial flood-plain deposits consists of a gravel lag layer at a depth of approximately 70 to 75 feet. As encountered, the materials are generally unconsolidated, loose to medium dense and soft to firm. The young alluvium generally consists of interbedded layers of gray-brown to dark-brown, friable, medium dense, clayey and silty sand, and moderately to very stiff, clay and sandy to silty clay and silt.

#### 3.3 Surface and Ground Water

Ground water was observed in all of the explorations at the site. Specifically, at the time of drilling, ground water was observed in our exploration borings at a depth of between approximately 8 to 21 feet below the ground surface (bgs); i.e. 17 to 20 feet above mean sea level (msl). It should be noted that perched ground water levels may develop and fluctuate during periods of precipitation or increased landscape irrigation. Therefore, we anticipate the conventional foundations will be located above the existing static ground water table at the site. However, it should be noted that any deep foundations will likely encounter ground water underlying the site.

#### 3.4 <u>Engineering Characteristics of On-site Soils</u>

Based on the results of our laboratory testing of representative on-site soils, and our professional experience on similar sites with similar soils conditions, the engineering characteristics of the on-site soils are discussed below.



#### 3.4.1 Expansion Potential

Based on our visual observations performed during our site reconnaissance, subsurface investigation, laboratory testing, and similar projects in the site vicinity, we anticipate the near surface soils to have a generally low to medium expansion potential. However, soils with greater expansion potential may be encountered during grading and additional testing may be warranted. Nevertheless, expansive soils are not anticipated to impact the proposed site development.

#### 3.4.2 Compressible Soils

Based on the results of our and previous subsurface explorations at the site, and review of other projects in the area, we expect that the upper 10 to 15 feet of the site is underlain by undocumented fill and alluvial deposits which are considered compressible. These soils are not considered suitable for support of foundation loads in their present condition. Recommendations for remedial grading of these soils are provided in Section 6 of this report.

#### 3.4.3 Soil Corrosivity

A preliminary corrosive soil screening for the on-site materials was completed to evaluate their potential effect on concrete and ferrous metals. The corrosion potential was evaluated using the results of laboratory testing on one representative soil sample obtained during our subsurface evaluation.

Laboratory testing was performed to evaluate pH, minimum electrical resistivity, and chloride and soluble sulfate content. The sample tested had measured pH value of 7.28, and a measured minimum electrical resistivity of 1,570 ohm-cm. Test results also indicated that the sample had a chloride content of 86 parts per million (ppm), and a soluble sulfate content of less than 0.0150 percent by weight in soil.

#### 3.4.4 Excavation Characteristics

The site is underlain by undocumented fill and Young Alluvial Floodplain Deposits generally consisting of silty to clayey sands with gravel and



cobbles to clays and sandy to silty clays. With regards to the proposed project, it is anticipated these on-site soils can be excavated with conventional heavy-duty construction equipment. Oversize cobble material, if encountered, should be placed in non-structural areas or hauled off-site.



#### 4.0 SEISMIC AND GEOLOGIC HAZARDS

#### 4.1 Regional Tectonic Setting and Seismicity

The site is considered to lie within a seismically active region, as can all of Southern California. During the late Pliocene, several new faults developed in Southern California, creating a new tectonic regime superposed on the flat-lying section of Tertiary and late Cretaceous rocks in the San Diego region.

The principal known onshore faults which collectively account for the majority of seismic hazard in southernmost California are the San Andreas, San Jacinto, Elsinore, Imperial and Rose Canyon faults. The balance of seismic hazard is taken by the offshore zone of faults which include the Coronado Bank, San Diego Trough, and San Clemente faults off of the San Diego. Most of the offshore faults coalesce south of the international border, where they come onshore as the Agua Blanca fault which transects the Baja California peninsula south of Ensenada (Jennings, 2010).

The primary seismic hazard for San Diego is the Rose Canyon fault zone which is located approximately 1.8 miles west of the site and is the 'active' seismogenic fault considered having the most significant effect at the site from a design standpoint.

#### 4.2 <u>Local Faulting</u>

Our review of available geologic literature (Appendix A) indicates that there are no known active or potentially active faults transecting, or projecting toward the site.

#### 4.3 Seismic Hazards

Severe ground shaking is most likely to occur during an earthquake on one of the regional active faults in Southern California that are mentioned above. The effect of seismic shaking may be mitigated by adhering to the California Building Code or state-of-the-art seismic design parameters of the Structural Engineers Association of California.



#### 4.3.1 Shallow Ground Rupture

As previously discussed, no faults are mapped transecting or projecting toward the site. Therefore, surface rupture hazard due to faulting is considered very low. Ground cracking due to shaking from a seismic event is not considered a significant hazard either, since the site is not located near slopes.

#### 4.3.2 Mapped Seismic Hazard Zones

The site is <u>not</u> located within a State mapped Earthquake Fault Zone (EFZ). However, the site is located within a City mapped geologic Hazard Category Number 31 for Liquefaction (High Potential - shallow groundwater, major drainages, hydraulic fills). The results of our analysis regarding secondary seismic hazards at the site are summarized in Section 4.4 below.

#### 4.3.3 Site Class

Utilizing 2013 California Building Code (CBC) procedures, we have characterized the site soil profile to be Site Class D based on our experience with similar sites in the project area and the results of our subsurface evaluation.

#### 4.3.4 <u>Building Code Mapped Spectral Acceleration Parameters</u>

The effect of seismic shaking may be mitigated by adhering to the California Building Code and state-of-the-art seismic design practices of the Structural Engineers Association of California. Provided below in Table 1 are the risk-targeted spectral acceleration parameters for the project determined in accordance with the 2013 California Building Code (CBSC, 2013) and the USGS U.S. Seismic Design Map tool (Version 3.1.0).



Table 1				
CBC Mapped Spectral Acceleration Parameters				
Site Class	D			
Site Coefficients	Fa	=	1.030	
Site Coefficients		=	1.547	
Mapped MCE <sub>R</sub> Spectral Accelerations	Ss	=	1.176g	
	S <sub>1</sub>	=	0.453g	
Site Modified MCE <sub>R</sub> Spectral Accelerations	$S_{MS}$	=	1.211g	
	S <sub>M1</sub>	=	0.701g	
Design Spectral Accelerations	S <sub>DS</sub>	=	0.807g	
	$S_{D1}$	=	0.467g	

Utilizing ASCE Standard 7-10, in accordance with Section 11.8.3, the following additional parameters for the peak horizontal ground acceleration are associated with the Geometric Mean Maximum Considered Earthquake (MCE $_{\rm G}$ ). The mapped MCE $_{\rm G}$  peak ground acceleration (PGA) is 0.519g for the site. For a Site Class D, the F $_{\rm PGA}$  is 1.000 and the mapped peak ground acceleration adjusted for Site Class effects (PGA $_{\rm M}$ ) is 0.519g for the site.

#### 4.4 Secondary Seismic Hazards

In general, secondary seismic hazards can include soil liquefaction, seismically-induced settlement, lateral displacement, surface manifestations of liquefaction, landsliding, seiches, and tsunamis. The potential for secondary seismic hazards at the subject site is discussed below.

#### 4.4.1 Liquefaction and Dynamic Settlement

Liquefaction and dynamic settlement of soils can be caused by strong vibratory motion due to earthquakes. Granular soils tend to densify when subjected to shear strains induced by ground shaking during earthquakes. Research and historical data indicate that loose granular soils underlain by a near surface ground water table are most susceptible to liquefaction, while the most clayey materials are not susceptible to liquefaction. Liquefaction is characterized by a loss of shear strength in the affected



soil layer, thereby causing the soil to behave as a viscous liquid. This effect may be manifested at the ground surface by settlement and, possibly, sand boils where insufficient confining overburden is present over liquefied layers. Where sloping ground conditions are present, liquefaction-induced instability can result.

In our preliminary liquefaction analysis utilizing the computer program CLiq Version 1.7.6.34, used the Maximum Considered Earthquake event with a mean magnitude M6.68 (i.e., associated with the Design Earthquake Ground Motion). The peak horizontal ground acceleration associated with the Maximum Considered Earthquake Ground Motion is 0.519g. Based on the results of the liquefaction analysis, several discontinuous and variable thickness liquefiable layers of saturated alluvial materials are located between a depth of approximately 10 to 75 feet. As encountered in the CPT explorations, the saturated layers located above 50 feet are considered susceptible to liquefaction at the design earthquake ground motion.

Total dynamic settlement at the site as a result of the Design Earthquake Ground Motion is roughly estimated at between approximately 5 to 10.5 inches. Differential dynamic settlement at the site is anticipated to be on the order of 2 inches over 50 feet considering the depth and nature of the liquefied zones. A summary plot showing idealized profile, relevant CPT data, calculated cyclic stress and resistance ratio, factor of safety, and liquefaction-induced settlement is provided in Appendix D.

#### 4.4.2 <u>Lateral Spread</u>

Empirical relationships have been derived (Youd et al., 1999) to estimate the magnitude of lateral spread due to liquefaction. These relationships include parameters such as earthquake magnitude, distance of the earthquake from the site, slope height and angle, the thickness of liquefiable soil, and gradation characteristics of the soil.

The susceptibility to earthquake-induced lateral spread is considered to be moderate for the site because of the nature of the underlying liquefiable layers, topography, and proximity to the San Diego River. It should be noted that the nearest distance from the site to an open slope face is



approximately 100 feet at the edge of the San Diego River where the face of the river channel is modified to an approximately 10 feet high 2:1 (horizontal:vertical) slope.

It is anticipated that lateral spreading can be mitigated through implementation of the recommended ground improvement program. Additional subsurface characterization and analysis would be required to further evaluate and quantify lateral spreading potential.

#### 4.4.3 Tsunamis and Seiches

Based on a site elevation of approximately 25 to 40 feet msl, the distance of the site from the Pacific coastline, and the CGS Tsunami Inundation Map of the area (CGS, 2009) the potential for flood damage to occur at the site from a tsunami or seiche is considered nil.

#### 4.5 Landslides

Several formations within the San Diego region are particularly prone to landsliding. These formations generally have high clay content and mobilize when they become saturated with water. Other factors, such as steeply dipping bedding that project out of the face of the slope and/or the presence of fracture planes, will also increase the potential for landsliding.

No landslides or indications of deep-seated landsliding were indicated at the site during our field exploration or our review of available geologic literature, topographic maps, and stereoscopic aerial photographs. Furthermore, our field reconnaissance and the local geologic maps indicate the site is generally underlain by favorable oriented geologic structure, consisting of massively bedded silty to clayey sands and sandy to silty clays. Therefore, the potential for significant landslides or large-scale slope instability at the site is considered nil.

#### 4.6 Flood Hazard

According to a Federal Emergency Management Agency (FEMA) flood insurance rate map (FEMA, 2012); the entire site <u>is</u> located within a Zone X floodplain, and the northeastern portion of the site is located with a Zone AE (100-year) floodplain. Based on our review of topographic maps, the site <u>is</u> also located downstream of a dam(s) (El Capitan and San Vicente Reservoirs) and is within a



mapped dam inundation area. However, based on this review and our site reconnaissance, the potential for flooding of the site is considered low since the adjacent portion of the San Diego River has been channelized.



#### 5.0 CONCLUSIONS

Based on the results of our geotechnical investigation of the site, it is our opinion that the proposed development is feasible from a geotechnical standpoint, provided the following conclusions and recommendations are incorporated into the project plans and specifications.

- Generally loose surficial soils consisting of fill and alluvium having depths of up to approximately 10 to 15 feet locally underlie the site and are considered compressible. Therefore, in their present condition, these soils are not considered suitable for the support of structural loads or the support of engineered fill soils and settlement sensitive site improvements. Section 6.1.2 of this report provides specific recommendations regarding mitigation of these soil materials.
- The underlying alluvial deposits to depths of up to 50 feet are subject to localized liquefaction, seismic settlement, and lateral spreading. Total dynamic settlement at the site as a result of the Design Earthquake Ground Motion is roughly estimated at between approximately 5 to 10 inches. Differential dynamic settlement at the site is anticipated to be on the order of 2 inches over 50 feet considering the depth and nature of the liquefied zones. Seismic settlement and lateral spreading should be mitigated by ground improvement. Section 6.1.5 of this report provides specific recommendations regarding mitigation of seismic settlement using ground improvement.
- Based on the results of our subsurface explorations and available geologic references, ground water is not anticipated to be a constraint during site construction, and we do not anticipate that temporary dewatering will be necessary. However, at the time of drilling, ground water was observed in our exploration borings at a depth of between approximately 8 to 21 feet below the ground surface (bgs); i.e. 17 to 20 feet above mean sea level (msl). It should be noted that ground water will be encountered during the construction of ground improvement.
- Based on the results of our subsurface investigation, we anticipate that the onsite materials should be generally rippable with conventional heavy-duty earthwork equipment. Although, localized areas of cobbles were encountered during our exploration, the existing onsite soils are suitable for reuse as engineered fill provided they are relatively free of organic material, debris, and rock fragments larger than 6 inches in maximum dimension. In addition, unknown items such as buried concrete



footings and demolition debris left from previous site development should be anticipated.

- Based on visual classification, materials derived from the on-site soil materials possess a low to medium expansion potential, although locally more expansive materials may be encountered.
- Although Leighton does not practice corrosion engineering, laboratory test results indicate the soils present on the site have a negligible potential for sulfate attack on normal concrete. The onsite soils are considered to be corrosive to buried uncoated ferrous metals.
- Based on the silty to sandy character of the near surface on-site soils, the existing onsite soils are anticipated to provide low to moderate infiltration rates of surface water. However, additional investigation regarding the infiltration characteristics of the site soils will be required before recommendations for the use of infiltration type devices for Low Impact Development (LID) can be provided. In addition, surface and subsurface improvements could be affected by some proposed LID measures and should therefore be fully evaluated before implementation.



#### 6.0 RECOMMENDATIONS

#### 6.0 Earthwork

We anticipate that earthwork at the site will consist of site preparation, excavation and fill operations, and ground improvement. We recommend that earthwork on the site be performed in accordance with the following recommendations and the General Earthwork and Grading Specifications for Rough Grading included in Appendix E. In case of conflict, the following recommendations supersede those in Appendix E.

#### 6.1.1 Site Preparation

Prior to grading, all areas to receive structural fill, engineered structures, or hardscape should be stripped of vegetation and cleared of surface and subsurface obstructions, including any existing debris and undocumented, loose, compressible, or unsuitable soils. Removed vegetation and debris should be properly disposed off site. All areas to receive fill and/or other surface improvements should be scarified to a minimum depth of 8 inches, brought to optimum or above-optimum moisture conditions, and recompacted to at least 90 percent relative compaction based on ASTM Test Method D1557

#### 6.1.2 Removal of Compressible Soils

Potentially compressible undocumented fill and surficial alluvial soils at the site may settle as a result of wetting or settle under the surcharge of engineered fill and/or structural loads supported on conventional foundations. These soils should be removed to undisturbed dense to stiff alluvium and replaced as moisture conditioned engineered fill. In general, removal depths will range from 10 to 15 feet below the existing ground surface across the site. Additionally, removal depths should extend to a minimum of 3 feet below bottom of foundation footings. The lateral limits of the removal bottom should extend a length equal to the removal depth where possible. If the recommended lateral removal limits cannot be accommodated, temporary shoring or slot removals may be necessary. The bottom of all removals should be evaluated by a Certified Engineering Geologist to confirm conditions are as anticipated.



As an alternative to the above recommended 10 to 15-foot deep removals, these soils may be improved utilizing the ground improvement that is recommended for improvement of the underlying alluvial soils. In that case, removal depths should extend to a minimum of 3 feet below bottom of foundation footings or a depth equal to 2 times the foundation width, whichever is greater. Section 6.1.5 of this report provides specific recommendations regarding mitigation of seismic settlement using ground improvement.

In areas of proposed pavements, hardscape and landscaping features, removals should be performed to a depth of 2 feet below proposed subgrade elevation and extend at least 2 feet beyond the limits of the proposed improvements. The bottom of all removals should be evaluated by a Certified Engineering Geologist to confirm conditions are as anticipated.

In general, the soil that is removed may be reused and placed as engineered fill provided the material is moisture conditioned to above optimum moisture content, and then recompacted prior to additional fill placement or construction. Soil with an expansion index greater than 50 should not be used within 5 feet of finish grade in the building pad. The actual depth and extent of the required removals should be confirmed during grading operations by the geotechnical consultant.

#### 6.1.3 Excavations and Oversize Material

Excavations of the onsite materials may generally be accomplished with conventional heavy-duty earthwork equipment. Due to the generally friable nature of the fill and alluvium, temporary excavations, such as utility trenches with vertical sides, may slough over time.

In accordance with OSHA requirements, excavations deeper than 5 feet should be shored or be laid back if workers are to enter such excavations. Temporary sloping gradients should be determined in the field by a "competent person" as defined by OSHA. For preliminary planning, sloping of fill soils at 1:1 (horizontal to vertical) may be assumed. Excavations supporting structures greater than 20 feet in height will



require an alternative sloping plan or shoring plan prepared by a California registered civil engineer.

#### 6.1.4 Ground Improvement

Stone columns may be considered to mitigate the effects of liquefaction and seismic settlement at the site and also reduce compressibility and improve bearing capacity. The area recommended for mitigation will be the areas under proposed apartment structures, parking structures, and any other settlement sensitive structures. The following recommendations are made for ground improvement using stone columns at the site.

We recommend that a site-specific ground improvement plan be drafted that will contain the location of stone columns including design diameter and spacing. The ground improvement program should be designed by the specialty ground improvement contractor performing the work with the goal of mitigating liquefaction and reducing anticipated settlements to a level that is acceptable to the project structural engineer.

The area ratio (area of stone column divided by area beneath footing) of stone column reinforcement should be at least 25 percent, with at least four columns at isolated footings. Stone columns should be at least 2 feet in diameter and embedded at least 50 feet below ground surface or 45 feet below the bottom of the footing, whichever is deeper. Based on the density and consistency of the materials beneath the site, we do not anticipate predrilling will be required.

To shorten the length of the stone column, the contractor may terminate the upper portion of the stone columns a few feet below the bottom of the foundation level. The cutoff elevation of the stone columns should allow placement of a minimum of 2 feet of engineered/compacted fill immediately below the foundation level. The onsite soil or concrete generated from the demolition of the existing buildings may be used as fill. If the onsite concrete is used, the gradation of the crushed concrete should conform to the gradation of Caltrans' Crushed Miscellaneous Base.



We recommend the selected method be "bottom feed" where stone is introduced to the bottom of the column by tremie. Shop drawings should include the following:

- Plans showing building foundation outline and stone column diameters, depths and locations.
- Stone column installation equipment
- Stone column aggregate specifications
- Field verification procedures for stone column should include:
  - Aggregate quality
  - Stone column diameter
  - Stone column density
  - Stone column modulus
  - Embedment into native materials

A field verification program using CPTs should be used to provide data to estimate the post ground improvement settlement. CPTs should be used prior to placement of ground improvement and following ground improvement. If the total static and seismic settlement after ground improvement is determined to be greater than 1.5 inches, a mat foundation may be required. Otherwise conventional foundations may be used. Field verification procedures should be reviewed by and be acceptable to the Geotechnical Engineer.

In addition, a field test or trial installation program is recommended to verify the ground improvement success (i.e., verified by ASTM D1586 (SPT) and/or ASTM D3441 (CPT)). Field test or trial installation procedures should be reviewed by and be acceptable to the Geotechnical Engineer.

#### 6.1.5 Engineered Fill

In areas proposed to receive engineered fill, the existing upper 8 inches of subgrade soils should be scarified then moisture conditioned to moisture content at or above the optimum content and compacted to 90 percent or more relative to the maximum laboratory dry density, as evaluated by ASTM D 1557. Soil materials utilized as fill should be free of oversized rock, organic materials, and deleterious debris. Rocks greater than 6



inches in diameter should not be placed within 2 feet of finished grade. Fill should be moisture conditioned to at least 2 percent above the optimum moisture content and compacted to 90 percent or more relative to the maximum laboratory dry density, as evaluated by ASTM D 1557. Although the optimum lift thickness for fill soils will be dependent on the type of compaction equipment utilized, fill should generally be placed in uniform lifts not exceeding approximately 8 inches in loose thickness.

In vehicle pavement and trash enclosure areas the upper 12 inches of subgrade soils should be scarified then moisture conditioned to a moisture content above optimum content and compacted to 95 percent or more relative to the maximum laboratory dry density, as evaluated by ASTM D 1557.

Placement and compaction of fill should be performed in general accordance with current City of San Diego grading ordinances, California Building Code, sound construction practice, these recommendations and the General Earthwork and Grading Specifications for Rough Grading presented in Appendix E.

# 6.1.6 Earthwork Shrinkage/Bulking

The volume change of excavated onsite materials upon recompaction as fill is expected to vary with material and location. Typically, the surficial soils vary significantly in natural and compacted density, and therefore, accurate earthwork shrinkage/bulking estimates cannot be determined. However, based on our experience, a 5 to 10 percent shrinkage factor is considered appropriate for the artificial fill and surficial alluvium at the site.

# 6.1.7 Import Soils

If import soils are necessary to bring the site up to the proposed grades, these soils should be granular in nature, environmentally clean, have an expansion index less than 50 (per ASTM Test Method D4829) and have a low corrosion impact to the proposed improvements. Import soils and/or the borrow site location should be evaluated by the geotechnical consultant prior to import.



# 6.1.8 Expansive Soils and Selective Grading

Based on our visual observations, we anticipate the onsite soil materials possess a moderate to high expansion potential. Although not anticipated, should an abundance of highly expansive materials be encountered, selective grading may need to be performed. In addition, to accommodate conventional foundation design, the upper 5 feet of materials within the building pad and 5 feet outside the limits of the building foundation should have a very low to low expansion potential (EI<50).

# 6.2 <u>Foundation and Slab Considerations</u>

At the time of drafting this report, loads for continuous footings and isolated footings, were not known. However, based on our understanding of the project, the proposed building may be constructed with conventional foundations after successful completion of a ground improvement program and verification testing. Foundations and slabs should be designed in accordance with structural considerations and the following recommendations. These recommendations assume that the soils encountered within 5 feet of pad grade have a low potential for expansion (EI<50). If more expansive materials are encountered and selective grading cannot be accomplished, revised foundation recommendations may be necessary. The foundation recommendations below assume that the all building foundations will be underlain by properly compacted engineered fill in accordance to Section 6.1.6 of this report, with ground improvement performed to the recommended depth.

# 6.2.1 Conventional Foundations

Proposed structures may be supported by spread footings founded in properly compacted engineered fill. Footings should extend a minimum of 24 inches beneath the lowest adjacent finish subgrade. At these depths, footings may be designed for a maximum allowable (FS >3) bearing pressure of 3,000 pounds per square foot. This capacity may also be increased by 500 psf per each additional foot of embedment up to a maximum of 4,000 psf. The allowable pressures may be increased by one-third when considering loads of short duration such as wind or seismic forces. The minimum recommended width of footings is 18 inches for continuous footings and 24 inches for square or round footings. Continuous footings should be designed in accordance with the structural engineer's



requirements and have a minimum reinforcement of four No. 5 reinforcing bars (two top and two bottom). Reinforcement of individual column footings should be per the structural requirements.

# 6.2.2 Foundation Setback

We recommend a minimum horizontal setback distance from retaining walls or slopes for all structural foundations, footings, and other settlement-sensitive structures as indicated on the Table 2 below. The minimum recommended setback distance from the most proximal foundation of retaining wall is equal to the height of the retaining wall. This distance is measured from the outside bottom edge of the structural footing, horizontally to the slope or retaining wall rear face, and is based on the slope or wall height. However, the foundation setback distance may be revised by the geotechnical consultant on a case-by-case basis if the geotechnical conditions are different than anticipated.

Table 2					
Minimum Foundation Setback from Retaining walls					
Slope Height	Setback				
less than 5 feet	5 feet				
5 to 15 feet	7 feet				

Please note that the soils within the structural setback area possess poor lateral stability, and improvements (such as retaining walls, sidewalks, fences, pavements, etc.) constructed within this setback area may be subject to lateral movement and/or differential settlement. Potential distress to such improvements may be mitigated by providing a deepened footing or a grade beam foundation system to support the improvement.

In addition, open or backfilled utility trenches that parallel or nearly parallel structure footings should not encroach within an imaginary 1:1 (horizontal to vertical) downward sloping line starting from the bottom edge of the footing and should also not be located closer than 18 inches from the face of the footing. Deepened footings should meet the setbacks as described above. Also, over-excavation should be accomplished such that deepening



of footings to accomplish the setback will not introduce a cut/fill transition bearing condition.

Where pipes cross under footings, the footings should be specially designed. Pipe sleeves should be provided where pipes cross through footings or footing walls and sleeve clearances should provide for possible footing settlement, but not less than 1 inch around the pipe.

# 6.2.3 Floor Slabs

Slab-on-grade should be at least 5 inches thick and be reinforced with No. 4 rebar 18 inches on center each way (minimum) placed at mid-height in the slab. We recommend control joints be provided across the slab at a maximum spacing of 10 feet on center or at appropriate intervals as designed by the project architect. Where moisture-sensitive finishes are planned, underslab moisture protection (i.e. vapor barriers) should be designed by the project architect in accordance with Section 4.505 of the 2013 California Green Building Standards Code (CBC, 2013).

The potential for slab cracking may be reduced by careful control of water/cement ratios. The contractor should take appropriate curing precautions during the pouring of concrete in hot weather to minimize cracking of the slabs. We recommend that a slipsheet (or equivalent) be utilized if grouted tile, marble tile, or other crack-sensitive floor covering is planned directly on concrete slabs. All slabs should be designed in accordance with structural considerations. If heavy vehicle or equipment loading is proposed for the slabs, greater thickness and increased reinforcing may be required. The additional measures should be designed by the structural engineer using a modulus of subgrade reaction of 150 pounds per cubic inch. Additional moisture/waterproofing measures that may be needed to accomplish desired serviceability of the building finishes should be designed by the project architect.

# 6.2.4 Settlement

For conventional footings, the recommended allowable-bearing capacity is based on a maximum total and differential static settlement of 1-inch and 3/4-inch, respectively. Since settlements are a function of footing size and



contact bearing pressures, some differential settlement can be expected where a large differential loading condition exists.

Differential dynamic settlement at the site is anticipated to be on the order of 2 inches over 50 feet considering the depth and nature of the liquefied zones.

# 6.2.5 Moisture Conditioning

The slab subgrade soils underlying the foundation systems should be presoaked in accordance with the recommendations presented in Table 3 prior to placement of the moisture barrier and slab concrete. The subgrade soil moisture content should be checked by a representative of Leighton prior to slab construction.

Presoaking or moisture conditioning may be achieved in a number of ways. But based on our professional experience, we have found that minimizing the moisture loss on pads that has been completed (by periodic wetting to keep the upper portion of the pad from drying out) and/or berming the lot and flooding for a short period of time (days to a few weeks) are some of the more efficient ways to meet the presoaking recommendations. If flooding is performed, a couple of days to let the upper portion of the pad dry out and form a crust so equipment can be utilized should be anticipated.



Table 3					
Presoaking Recommendations Based on Finish Grade Soil Expansion					
	Potential				
Expansion Potential	Presoaking Recommendations				
Very Low	Near-optimum moisture content to a minimum depth of 6 inches				
Low	120 percent of the optimum moisture content to a minimum depth of 12 inches below slab subgrade				
Medium	130 percent of the optimum moisture content to a minimum depth of 18 inches below slab subgrade				
High	130 percent of the optimum moisture content to a minimum depth of 24 inches below slab subgrade				

# 6.2.6 Post-Tension Foundation Recommendations

As an alternative to the conventional foundations for the buildings, posttensioned foundations may be used. We recommend that post-tensioned foundations be designed using the geotechnical parameters presented in table below and criteria of the 2013 California Building Code and the Third Edition of Post-Tension Institute Manual. A post-tensioned foundation system designed and constructed in accordance with recommendations is expected to be structurally adequate for the support of the buildings planned at the site provided our recommendations for surface drainage and landscaping are carried out and maintained through the design life of the project. Based on an evaluation of the depths of fill beneath the building pads, the attached Table 4 presents the recommended post-tension foundation category for residential buildings on subject site.



Table 4						
Post-Tensioned Foundation Design Recommendations						
Design (	Criteria	Category I Very Low to Low Expansion Potential (EI 0 to 50)  Category II Medium Expansion Potential (EI 50 to 90)		Category III High Expansion Potential (El 90 to 130)		
Edge Moisture Variation, e <sub>m</sub>	Center Lift:	9.0 feet	8.3 feet	7.0 feet		
	Edge Lift:	4.8 feet	4.2 feet	3.7 feet		
Differential	Center Lift:	0.46 inches	0.75 inches	1.09 inches		
Swell, y <sub>m</sub>	Edge Lift:	0.78 inches	1.32 inches	1.99 inches		
Perimeter F Depth:	ooting	18 inches	24 inches	30 inches		
Allowable B Capacity	earing		2,500 psf			

The post-tensioned (PT) foundation and slab should also be designed in accordance with structural considerations. For a ribbed PT foundation, the concrete slabs section should be at least 5 inches thick. Continuous footings (ribs or thickened edges) with a minimum width of 12 inches and a minimum depth of 12 inches below lowest adjacent soil grade may be designed for a maximum allowable bearing pressure of 2,500 pounds per square foot. For a uniform thickness "mat" PT foundation, the perimeter cut off wall should be at least 8 inches below the lowest adjacent grade. However, note that where a foundation footing or perimeter cut off wall is within 3 feet (horizontally) of adjacent drainage swales, the adjacent footing should be embedded a minimum depth of 12 inches below the swale flow line. The allowable bearing capacity may be increased by one-third for short-term loading. The slab subgrade soils should be presoaked in accordance with the recommendation presented in Table 3 above prior to placement of the moisture barrier.



The slab should be underlain by a moisture barrier as discussed in Section 6.2.3 above. Note that moisture barriers can retard, but not eliminate moisture vapor movement from the underlying soils up through the slabs. We recommend that the floor covering installer test the moisture vapor flux rate prior to attempting applications of the flooring. "Breathable" floor coverings should be considered if the vapor flux rates are high. A slip-sheet or equivalent should be utilized above the concrete slab if crack-sensitive floor coverings (such as ceramic tiles, etc.) are to be placed directly on the concrete slab. Additional guidance is provided in ACI Publications 302.1R-04 Guide for Concrete Floor and Slab Construction and 302.2R-06 Guide for Concrete Slabs that Receive Moisture-Sensitive Floor Materials.

# 6.3 <u>Lateral Earth Pressures and Retaining Wall Design</u>

Should retaining walls be added to the project, Table 5 presents the lateral earth pressure values for level or sloping backfill for walls backfilled with and bearing against fully drained soils of very low to low expansion potential (less than 50 per ASTM D4829).

Table 5							
S	Static Equivalent Fluid	Weight (pcf)					
Conditions	Conditions Level 2:1 Slope						
Active	35	55					
At-Rest	55	65					
Passive	350	150					
Passive	(Maximum of 3 ksf)	(sloping down)					

Walls up to 10 feet in height should be designed for the applicable pressure values provided above. If conditions other than those covered herein are anticipated, the equivalent fluid pressure values should be provided on an individual case-by-case basis by the geotechnical engineer. A surcharge load for a restrained or unrestrained wall resulting from automobile traffic may be assumed to be equivalent to a uniform lateral pressure of 75 psf which is in addition to the equivalent fluid pressure given above. For other uniform surcharge loads, a uniform pressure equal to 0.35q should be applied to the wall. The wall pressures assume walls are backfilled with free draining materials and water is not allowed to accumulate behind walls. A typical drainage design is



contained in Appendix E. Wall backfill should be compacted by mechanical methods to at least 90 percent relative compaction (based on ASTM D1557). If foundations are planned over the backfill, the backfill should be compacted to 95 percent. Wall footings should be designed in accordance with the foundation design recommendations and reinforced in accordance with structural considerations. For all retaining walls, we recommend a minimum horizontal distance from the outside base of the footing to daylight as outlined in Section 6.2.2.

Lateral soil resistance developed against lateral structural movement can be obtained from the passive pressure value provided above. Further, for sliding resistance, the friction coefficient of 0.35 may be used at the concrete and soil interface. These values may be increased by one-third when considering loads of short duration including wind or seismic loads. The total resistance may be taken as the sum of the frictional and passive resistance provided that the passive portion does not exceed two-thirds of the total resistance.

To account for potential redistribution of forces during a seismic event, retaining walls providing lateral support where exterior grades on opposites sides differ by more than 6 feet fall under the requirements of 2013 CBC Section 1803.5.12 and/or ASCE 7-10 Section 15.6.1 and should also be analyzed for seismic loading. For that analysis, an additional uniform lateral seismic force of 9H should be considered for the design of the retaining walls with level backfill, where H is the height of the wall. This value should be increased by 150% for restrained walls.

# 6.4 Geochemical Considerations

Concrete in direct contact with soil or water that contains a high concentration of soluble sulfates can be subject to chemical deterioration commonly known as "sulfate attack." Soluble sulfate results (Appendix C) indicated a negligible soluble sulfate content. We recommend that concrete in contact with earth materials be designed in accordance with Section 4 of ACI 318-11 (ACI, 2011). In addition, the electrical resistivity characteristics of the tested soil sample indicate a moderately corrosive site environment to ferrous materials in contact with earth materials. We recommend measures to mitigate corrosion be implemented during design and construction.



# 6.5 Concrete Flatwork

Concrete sidewalks and other flatwork (including construction joints) should be designed by the project civil engineer and should have a minimum thickness of 4 inches. For all concrete flatwork, the upper 12 inches of subgrade soils should be moisture conditioned to at least 2 percent above optimum moisture content and compacted to at least 90 percent relative compaction based on ASTM Test Method D1557 prior to the concrete placement.

# 6.6 Preliminary Pavement Design

The pavement section design below is based on an assumed Traffic Index (TI), our visual classification of the subject site soils, and our limited laboratory testing (we have estimated an R-value of 15). The TI values were chosen based on our experience with similar projects. Actual pavement recommendations should be based on R-value tests performed on bulk samples of the soils that are exposed at the finished subgrade elevations across the site at the completion of the mass grading operations. Flexible pavement sections have been evaluated in general accordance with the Caltrans method for flexible pavement design. The recommended flexible pavement section for this condition is given in Table 6 below:

Table 6					
Pre	liminary Pavement Se	ctions			
Assumed Traffic Asphalt Concrete Aggregate Base Index (TI) (inches) (inches)					
4.5	3.0	7.0			
5.0	4.0	6.0			
6.0	4.0	10.0			

Flexible pavements should be constructed in accordance with current Caltrans Standard Specifications. Aggregate base should comply with the Caltrans Standard Specifications of Section 26. Aggregate base should be compacted to a minimum of 95 percent relative compaction based on ASTM Method D 1557.

For areas subject to regular truck loading (i.e., trash truck apron), we recommend a full depth of Portland Cement Concrete (P.C.C.) section of 7 inches with appropriate steel reinforcement and crack-control joints as designed by the project



structural engineer. We recommend that sections be as nearly square as possible. A 3,500-psi mix that produces a 550-psi modulus of rupture should be utilized.

All pavement section materials conform to and be placed in accordance with the latest revision of the California Department of Transportation Standard Specifications (Caltrans) and American Concrete Institute (ACI) codes. The upper 12 inches of subgrade soil and all aggregate base should be compacted to a relative compaction of at least 95 percent (based on ASTM Test Method D1557).

If pavement areas are adjacent to heavily watered landscape areas, we recommend some measure of moisture control be taken to prevent the subgrade soils from becoming saturated. It is recommended that the concrete curing separating the landscaping area from the pavement extend below the aggregate base to help seal the ends of the sections where heavy landscape watering may have access to the aggregate base. Concrete swales should be designed in roadway or parking areas subject to concentrated surface runoff.

# 6.7 <u>Control of Ground Water and Surface Waters</u>

Regarding Low Impact Development (LID) measures, we are of the opinion that infiltration basins, and other onsite storm water retention and infiltration systems can potentially create adverse perched ground water conditions when not installed using proper design recommendations (such as the use of liners) and infiltration design parameters. Nevertheless, based on the visual consistency of the near surface on-site soils, the existing onsite soils are anticipated to provide low to moderate infiltration of surface water. However, additional investigation regarding the infiltration characteristics of the site soils will be required before the use of LID infiltration devices may be recommend for the site.

Surface drainage should be controlled at all times and carefully taken into consideration during precise grading, landscaping, and construction of site improvements. Positive drainage (e.g., roof gutters, downspouts, area drains, etc.) should be provided to direct surface water away from structures and improvements and towards the street or suitable drainage devices. Ponding of water adjacent to structures or pavements should be avoided. Roof gutters, downspouts, and area drains should be aligned so as to transport surface water to a minimum distance of 5 feet away from structures. The performance of structural foundations is dependent upon maintaining adequate surface drainage away from structures.



Water should be transported off the site in approved drainage devices or unobstructed swales. We recommend a minimum flow gradient for unpaved drainage within 5 feet of structures of 2 percent sloping away.

The impact of heavy irrigation or inadequate runoff gradient can create perched water conditions, resulting in seepage or shallow ground water conditions where previously none existed. Maintaining adequate surface drainage and controlled irrigation will significantly reduce the potential for nuisance-type moisture problems. To reduce differential earth movements such as heaving and shrinkage due to the change in moisture content of foundation soils, which may cause distress to a structure and improvements, moisture content of the soils surrounding the structure should be kept as relatively constant as possible. Below grade planters should not be situated adjacent to structures or pavements unless provisions for drainage such as catch basins and drains are made.

All area drain inlets should be maintained and kept clear of debris in order to function properly. In addition, landscaping should not cause any obstruction to site drainage. Rerouting of drainage patterns and/or installation of area drains should be performed, if necessary, by a qualified civil engineer or a landscape architect.

# 6.8 <u>Construction Observation</u>

The recommendations provided in this report are based on preliminary design information and subsurface conditions disclosed by widely spaced excavations. The interpolated subsurface conditions should be checked by Leighton and Associates, Inc. in the field during construction. Construction observation of all onsite excavations and field density testing of all compacted fill should be performed by a representative of this office. We recommend that all excavations be mapped by the geotechnical consultant during grading to determine if any potentially adverse geologic conditions exist at the site.

# 6.9 Plan Review

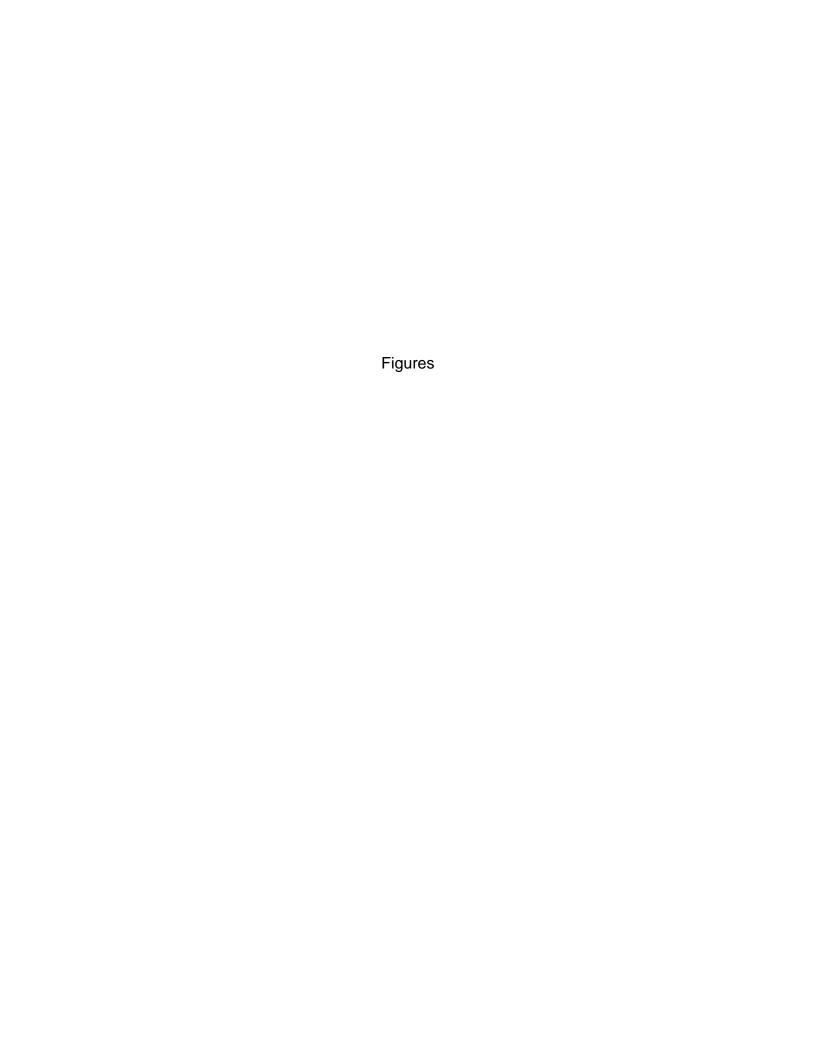
Final project grading and foundation plans should be reviewed by Leighton as part of the design development process to ensure that recommendations in this report are incorporated in project plans.

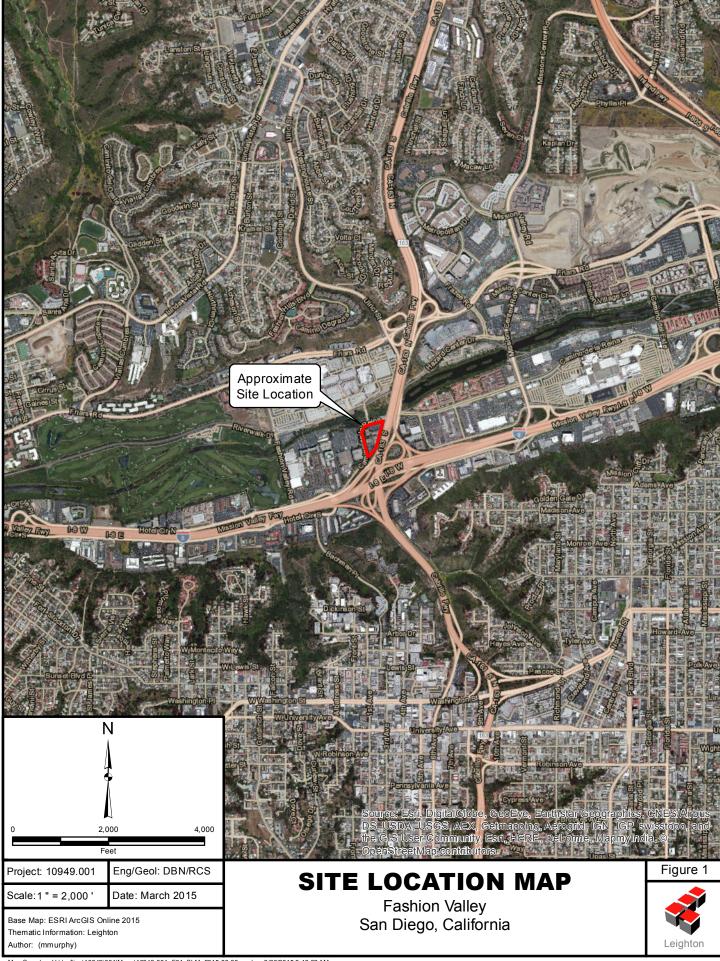


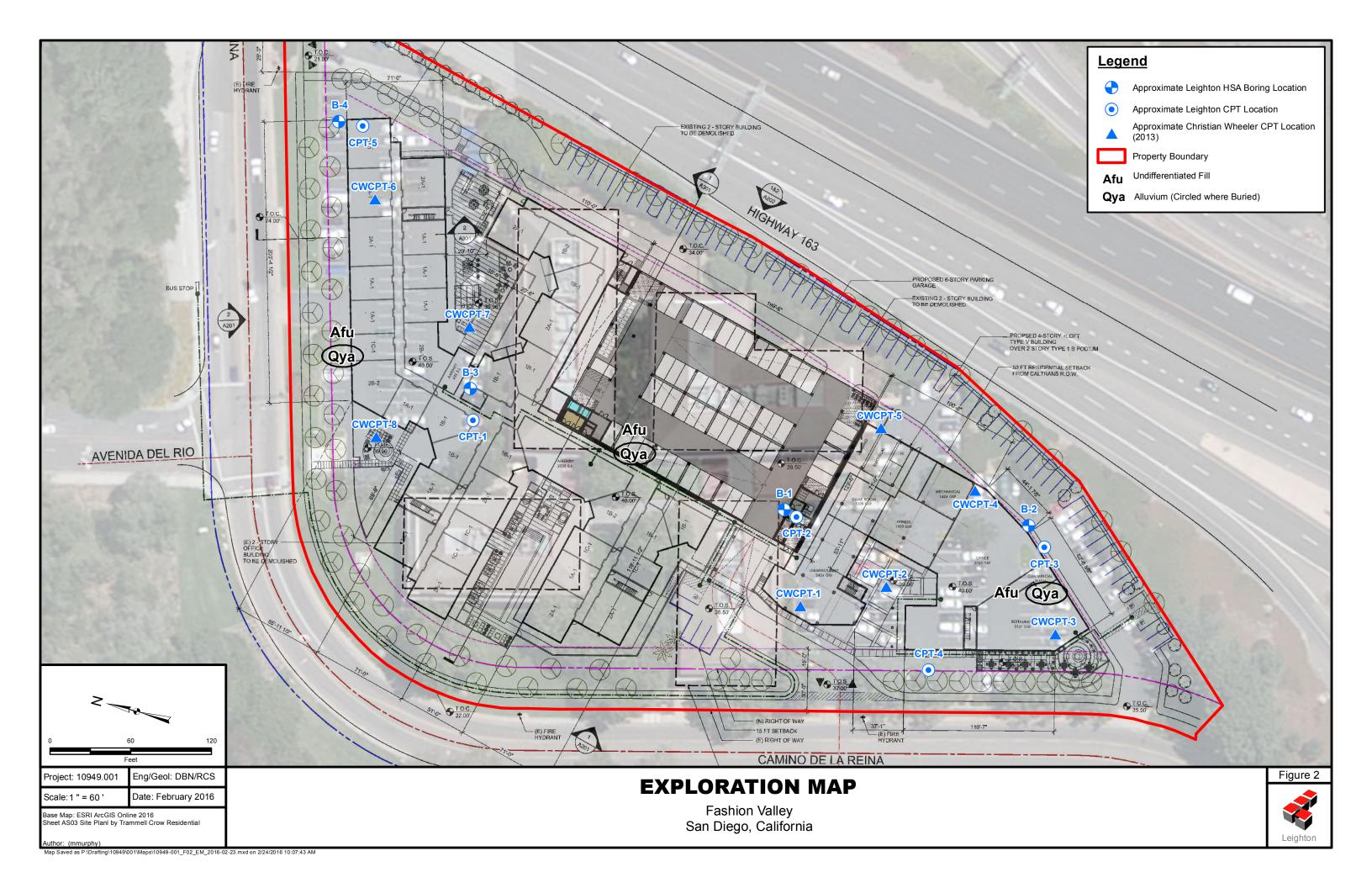
# 7.0 LIMITATIONS

The conclusions and recommendations presented in this report are based in part upon data that were obtained from a limited number of observations, site visits, excavations, samples, and tests. Such information is by necessity incomplete. The nature of many sites is such that differing geotechnical or geological conditions can occur within small distances and under varying climatic conditions. Changes in subsurface conditions can and do occur over time. Therefore, the findings, conclusions, and recommendations presented in this report can be relied upon only if Leighton has the opportunity to observe the subsurface conditions during grading and construction of the project, in order to confirm that our preliminary findings are representative for the site.









Appendix A References

# APPENDIX A

### REFERENCES

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# APPENDIX A

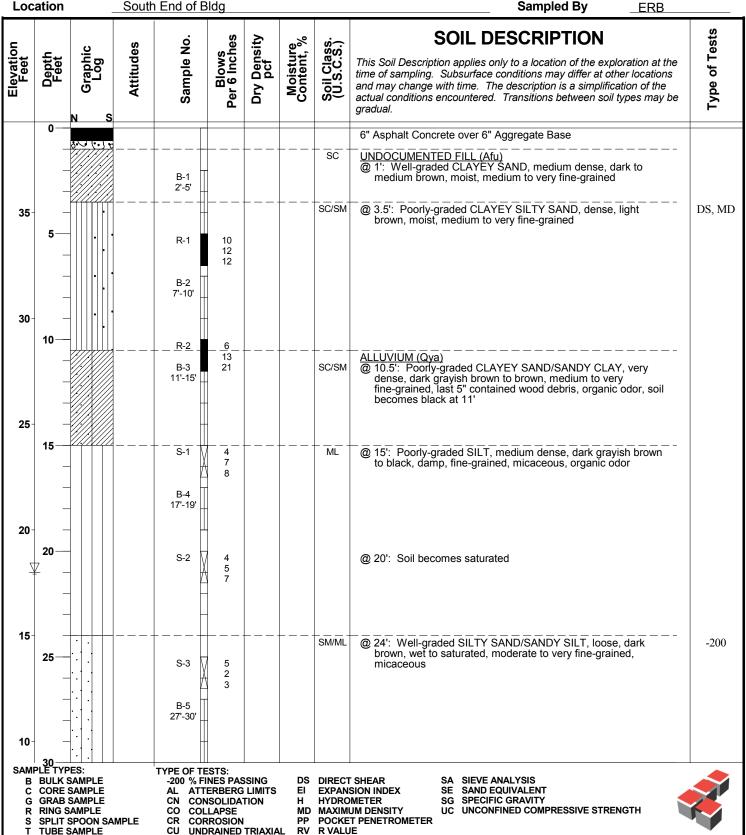
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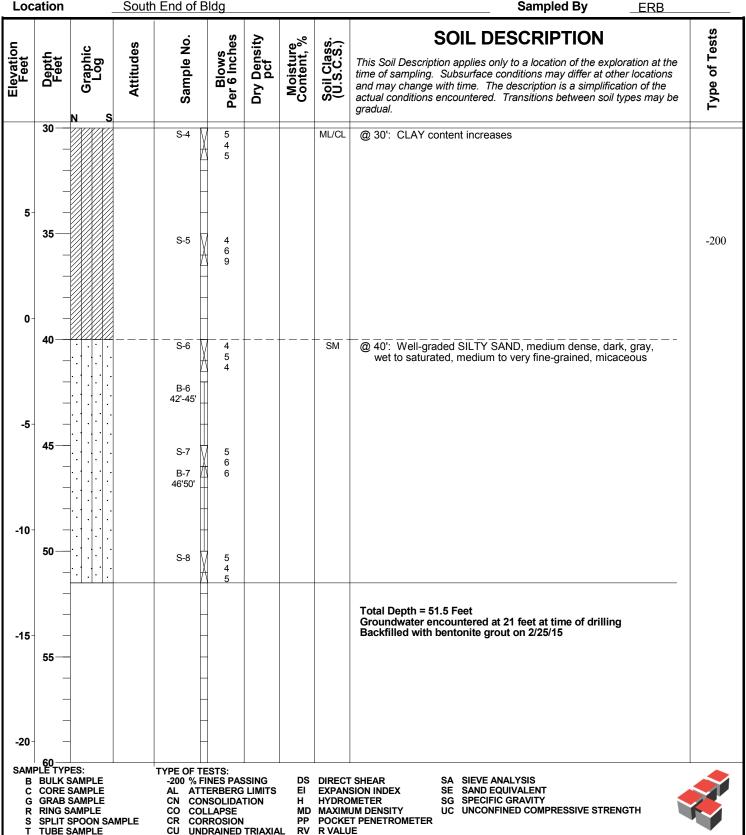
Appendix B Boring Logs/CPT Logs

							<b>71 II</b> (		E DOMINO EGO MET	
Project No.  Project K  Drilling Co.		IZEN/	TO DODIN	1010	2 004	DUIG	0	Date Drilled	-	
		KEY	TO BORII	NG LO	3 GRA	PHIC	Logged By Hole Diameter			
	-	ethod							Ground Elevation	
Loc	ation								Sampled By	
			w		Se	£	.%	si 🕝	SOIL DESCRIPTION	sts
Elevation Feet	Depth Feet	z Graphic Log م	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.	Type of Tests
	0-								Asphaltic concrete	
	-	7 4 4 7 7 1							Portland cement concrete	
	-							CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay	
	-							СН	Inorganic clay; high plasticity, fat clays	
		2777						OL	Organic clay; medium to plasticity, organic silts	
	5—							ML	Inorganic silt; clayey silt with low plasticity	
								МН	Inorganic silt; diatomaceous fine sandy or silty soils; elastic silt	
								ML-CL	Clayey silt to silty clay	
		7.2						GW	Well-graded gravel; gravel-sand mixture, little or no fines	
	••	0000						GP	Poorly graded gravel; gravel-sand mixture, little or no fines	
	10-	0 10						GM	Silty gravel; gravel-sand-silt mixtures	
								GC	Clayey gravel; gravel-sand-clay mixtures	
		ΔΔΔ						SW	Well-graded sand; gravelly sand, little or no fines	
	-							SP	Poorly graded sand; gravelly sand, little or no fines	
								SM	Silty sand; poorly graded sand-silt mixtures	
	15—							SC	Clayey sand; sand-clay mixtures	
									Bedrock	
7	· -			B-1					Ground water encountered at time of drilling Bulk Sample	
	20-	-		C-1					Core Sample	
	-			G-1					Grab Sample	
	-			R-1					Modified California Sampler (3" O.D., 2.5 I.D.)	
	-			SH-1					Shelby Tube Sampler (3" O.D.)	
	-			S-1 V					Standard Penetration Test SPT (Sampler (2" O.D., 1.4" I.D.)	
	25—			PUSH A					Sampler Penetrates without Hammer Blow	
	5									
	LE TYP			TYPE OF TE						_
C G R S	C CORE SAMPLE AL ATTERBERG LIMITS EI EXPANSION INDEX SE SAND EQUIVALENT G GRAB SAMPLE CN CONSOLIDATION H HYDROMETER TR THERMAL RESISTIVITY R RING SAMPLE CO COLLAPSE MD MAXIMUM DENSITY UC UNCONFINED COMPRESSIVE STRENGTH									

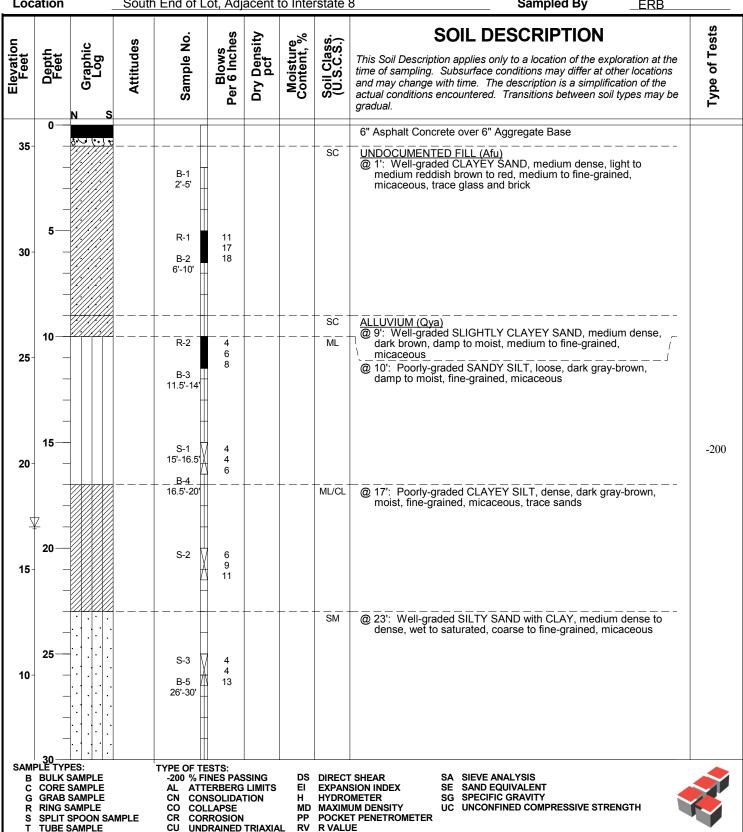
Project No. 2-25-15 10949.001 **Date Drilled Project** Fashion Valley Logged By **ERB Drilling Co. Baja Exploration Hole Diameter** 8" **Drilling Method** Hollow Stem Auger - 140lb - Autohammer - 30" Drop **Ground Elevation** 39' Location South End of Bldg Sampled By



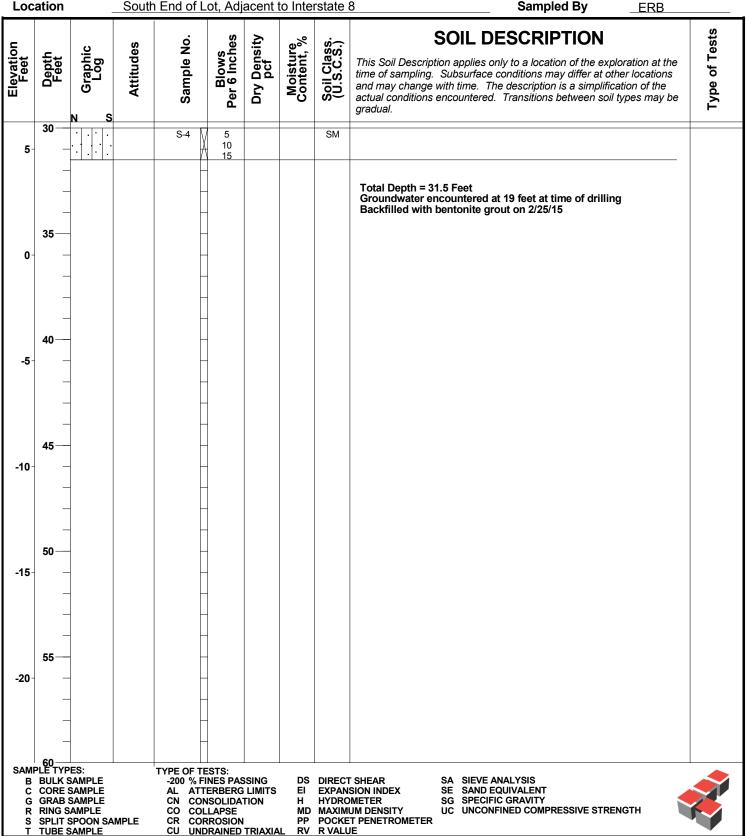
Project No. 2-25-15 10949.001 **Date Drilled Project Fashion Valley ERB** Logged By **Drilling Co. Baja Exploration Hole Diameter** 8" **Drilling Method** Hollow Stem Auger - 140lb - Autohammer - 30" Drop **Ground Elevation** 39' Location South End of Bldg Sampled By



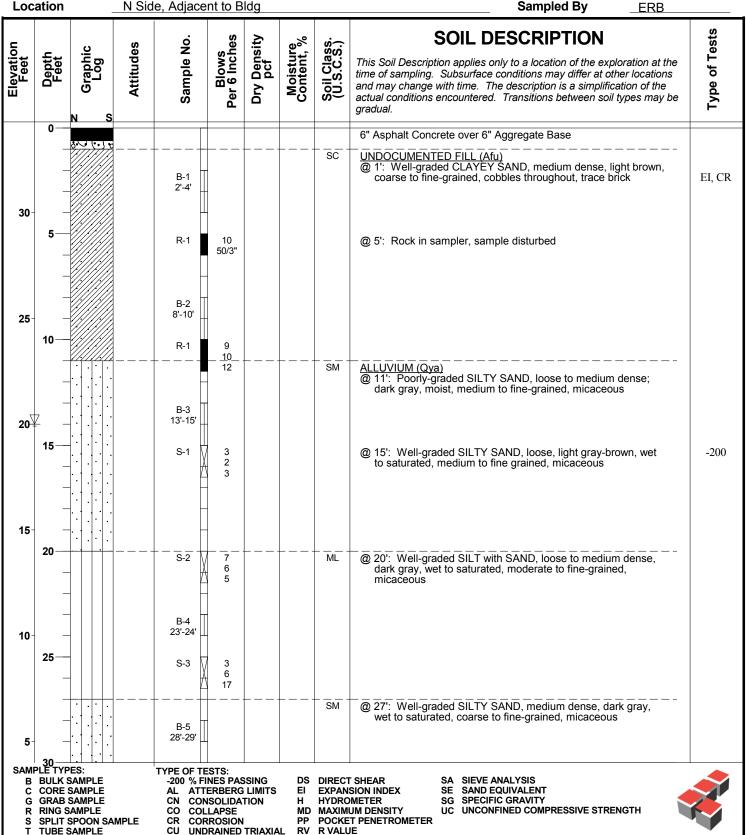
Project No. 2-25-15 10949.001 **Date Drilled Project** Fashion Valley Logged By **ERB Drilling Co. Baja Exploration Hole Diameter** 8" **Drilling Method** Hollow Stem Auger - 140lb - Autohammer - 30" Drop **Ground Elevation** 36' Location South End of Lot, Adjacent to Interstate 8 Sampled By **ERB** 



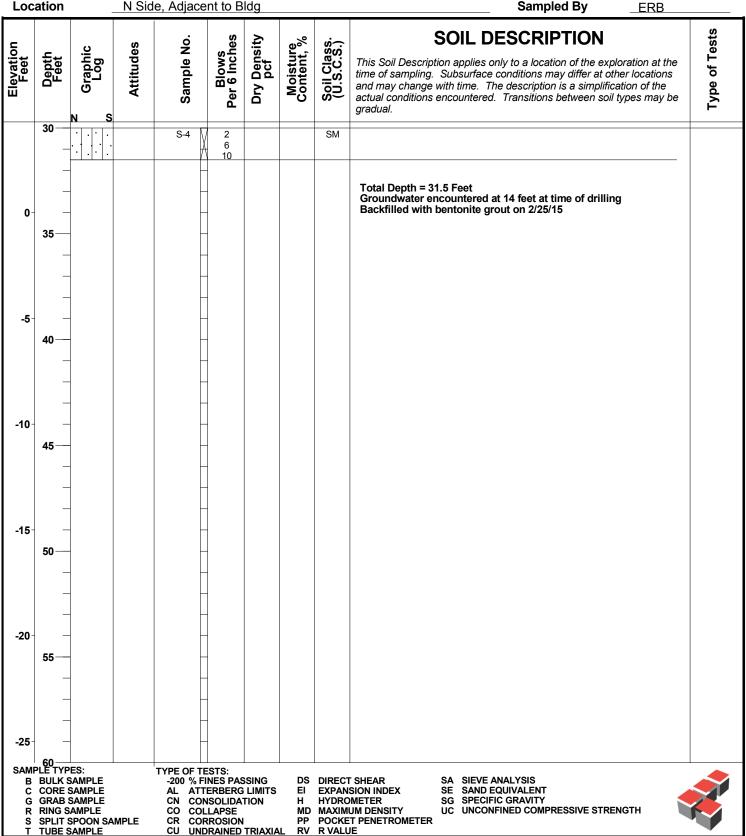
Project No. 2-25-15 10949.001 **Date Drilled Project Fashion Valley ERB** Logged By **Drilling Co. Baja Exploration Hole Diameter** 8" **Drilling Method** Hollow Stem Auger - 140lb - Autohammer - 30" Drop **Ground Elevation** 36' Location South End of Lot, Adjacent to Interstate 8 Sampled By



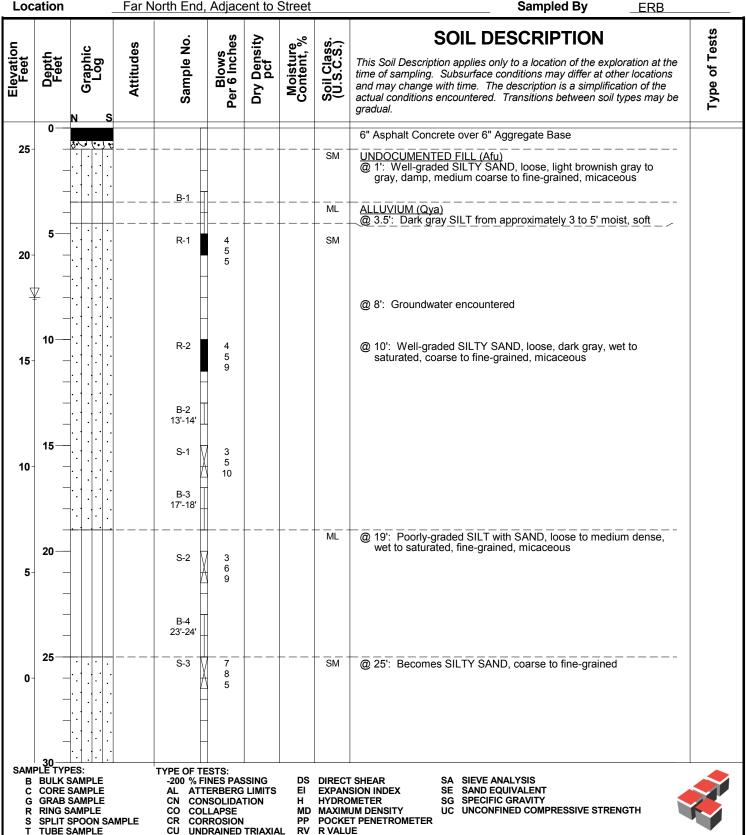
Project No. 2-25-15 10949.001 **Date Drilled Project** Fashion Valley Logged By **ERB Drilling Co. Baja Exploration Hole Diameter** 8" **Drilling Method** Hollow Stem Auger - 140lb - Autohammer - 30" Drop **Ground Elevation** 34' Location N Side, Adjacent to Bldg Sampled By



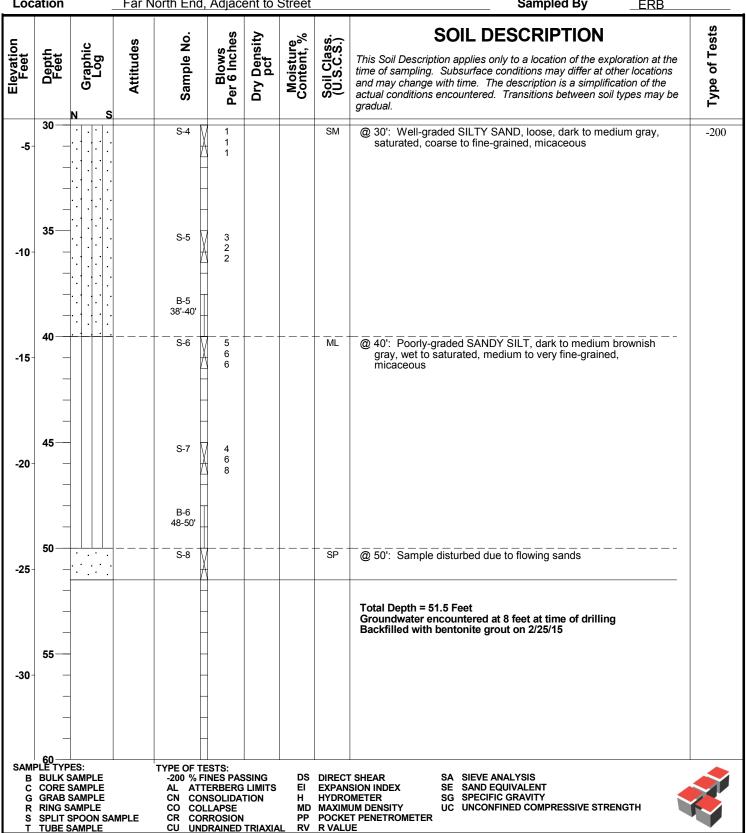
Project No. 2-25-15 10949.001 **Date Drilled Project Fashion Valley Logged By ERB Drilling Co. Baja Exploration Hole Diameter** 8" **Drilling Method** Hollow Stem Auger - 140lb - Autohammer - 30" Drop **Ground Elevation** 34' Location N Side, Adjacent to Bldg Sampled By



Project No. 2-25-15 10949.001 **Date Drilled Project** Fashion Valley Logged By **ERB Drilling Co. Baja Exploration Hole Diameter** 8" **Drilling Method** Hollow Stem Auger - 140lb - Autohammer - 30" Drop **Ground Elevation** 26' Location Far North End, Adjacent to Street Sampled By



Project No.	10949.001	Date Drilled	2-25-15
Project	Fashion Valley	Logged By	ERB
Drilling Co.	Baja Exploration	Hole Diameter	8"
<b>Drilling Method</b>	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	Ground Elevation	26'
Location	Far North End, Adjacent to Street	Sampled By	ERB



# **SUMMARY**

# OF CONE PENETRATION TEST DATA

Project:

Fashion Valley Geot 123 Camino De La Reina San Diego, CA February 25, 2015

Prepared for:

Mr. Bob Stroh
Leighton & Associates
3934 Murphy Canyon Road, B205
San Diego, CA 92123-4425
Office (858) 292-8030 / Fax (858) 292-0771

Prepared by:



# KEHOE TESTING & ENGINEERING

5415 Industrial Drive Huntington Beach, CA 92649-1518 Office (714) 901-7270 / Fax (714) 901-7289 www.kehoetesting.com

# **TABLE OF CONTENTS**

- 1. INTRODUCTION
- 2. SUMMARY OF FIELD WORK
- 3. FIELD EQUIPMENT & PROCEDURES
- 4. CONE PENETRATION TEST DATA & INTERPRETATION

# **APPENDIX**

- CPT Plots
- CPT Classification/Soil Behavior Chart
- Interpretation Output (CPeT-IT)
- CPeT-IT Calculation Formulas

# **SUMMARY**

# **OF**

# CONE PENETRATION TEST DATA

# 1. INTRODUCTION

This report presents the results of a Cone Penetration Test (CPT) program carried out for the Fashion Valley Geot project located at 123 Camino De La Reina in San Diego, California. The work was performed by Kehoe Testing & Engineering (KTE) on February 25, 2015. The scope of work was performed as directed by Leighton & Associates personnel.

# 2. SUMMARY OF FIELD WORK

The fieldwork consisted of performing CPT soundings at five locations to determine the soil lithology. Groundwater measurements and hole collapse depths provided in **TABLE 2.1** are for information only. The readings indicate the apparent depth to which the hole is open and the apparent water level (if encountered) in the CPT probe hole at the time of measurement upon completion of the CPT. KTE does not warranty the accuracy of the measurements and the reported water levels may not represent the true or stabilized groundwater levels.

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-1	82	Refusal, hole open to 13 ft (dry)
CPT-2	60	Hole open to 10 ft (dry)
CPT-3	60	Hole open to 14 ft (dry)
CPT-4	60	Hole open to 15 ft (dry)
CPT-5	60	Hole open to 5 ft (dry)

**TABLE 2.1 - Summary of CPT Soundings** 

### 3. FIELD EQUIPMENT & PROCEDURES

The CPT soundings were carried out by **KTE** using an integrated electronic cone system manufactured by Vertek. The CPT soundings were performed in accordance with ASTM standards (D5778). The cone penetrometers were pushed using a 30-ton CPT rig. The cone used during the program was a 15 cm<sup>2</sup> cone and recorded the following parameters at approximately 2.5 cm depth intervals:

- Cone Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (u)
- Inclination
- Penetration Speed

The above parameters were recorded and viewed in real time using a laptop computer. Data is stored at the KTE office for future analysis and reference. A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

# 4. CONE PENETRATION TEST DATA & INTERPRETATION

The Cone Penetration Test data is presented in graphical form in the attached Appendix. These plots were generated using the CPeT-IT program. Penetration depths are referenced to ground surface. The soil classification on the CPT plots is derived from the attached CPT Classification Chart (Robertson) and presents major soil lithologic changes. The stratigraphic interpretation is based on relationships between cone resistance (qc), sleeve friction (fs), and penetration pore pressure (u). The friction ratio (Rf), which is sleeve friction divided by cone resistance, is a calculated parameter that is used along with cone resistance to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone resistance and generate excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little (or negative) excess pore water pressures.

Tables of basic CPT output from the interpretation program CPeT-IT are provided for CPT data averaged over one foot intervals in the Appendix. Spreadsheet files of the averaged basic CPT output and averaged estimated geotechnical parameters are also included for use in further geotechnical analysis. We recommend a geotechnical engineer review the assumed input parameters and the calculated output from the CPeT-IT program. A summary of the equations used for the tabulated parameters is provided in the Appendix.

It should be noted that it is not always possible to clearly identify a soil type based on qc, fs and u. In these situations, experience, judgement and an assessment of the pore pressure data should be used to infer the soil behavior type.

If you have any questions regarding this information, please do not hesitate to call our office at (714) 901-7270.

Sincerely,

Kehoe Testing & Engineering

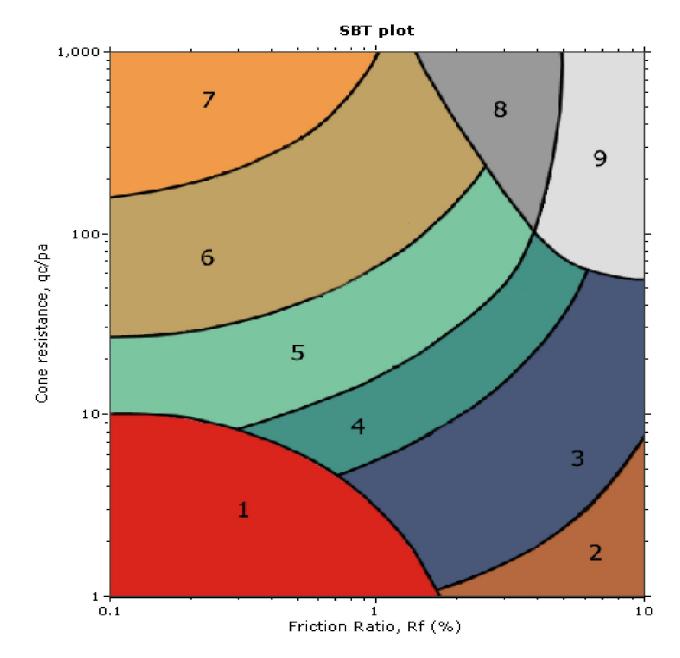
Richard W. Koester, Jr. General Manager

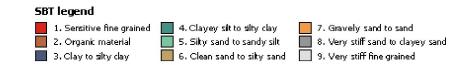
02/27/15-ms-5705

# K<sub>T</sub>

# Kehoe Testing and Engineering

714-901-7270 rich@kehoetesting.com www.kehoetesting.com





Presented below is a list of formulas used for the estimation of various soil properties. The formulas are presented in SI unit system and assume that all components are expressed in the same units.

# :: Unit Weight, g (kN/m3) ::

$$g = g_w \cdot \left(0.27 \cdot log(R_f) + 0.36 \cdot log(\frac{q_t}{p_a}) + 1.236\right)$$

where gw = water unit weight

### :: Permeability, k (m/s) ::

$$I_c <$$
 3.27 and  $I_c >$  1.00 then  $k =$  10  $^{0.952\text{--}3.04\cdot I_c}$ 

$$I_c \leq 4.00$$
 and  $I_c > 3.27$  then  $k = 10^{-4.52\text{-}1.37 \cdot I_c}$ 

### :: N<sub>SPT</sub> (blows per 30 cm) ::

$$N_{60} = \left(\frac{q_c}{P_a}\right) \cdot \frac{1}{10^{1.1268 - 0.2817 \cdot I_c}}$$

$$N_{1(60)} = Q_{tn} \cdot \frac{1}{10^{1.1268-0.2817 \cdot I_c}}$$

### :: Young's Modulus, Es (MPa) ::

$$(q_t - \sigma_v) \cdot 0.015 \cdot 10^{0.55 \cdot I_c + 1.68}$$

(applicable only to  $I_c < I_{c\_cutoff}$ )

# :: Relative Density, Dr (%) ::

$$100 \cdot \sqrt{\frac{Q_{tn}}{k_{DR}}} \qquad \qquad \text{(applicable only to SBT}_n: 5, 6, 7 and 8} \\ \text{or } I_c < I_{c\_cutoff} \text{)}$$

### :: State Parameter, ψ ::

$$\psi = 0.56 - 0.33 \cdot \log(Q_{tn.cs})$$

### :: Peak drained friction angle, φ (°) ::

$$\phi = 17.60 + 11 \cdot \log(Q_{to})$$

(applicable only to SBT<sub>n</sub>: 5, 6, 7 and 8)

### :: 1-D constrained modulus, M (MPa) ::

If 
$$I_c > 2.20$$

$$a = 14 \text{ for } Q_{tn} > 14$$

$$a = Q_{tn}$$
 for  $Q_{tn} \le 14$ 

$$M_{CPT} = a \cdot (q_t - \sigma_v)$$

If 
$$I_c \leq 2.20$$

$$M_{CPT} = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$$

# :: Small strain shear Modulus, Go (MPa) ::

$$\mathsf{G}_0 = (\mathsf{q}_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$$

# :: Shear Wave Velocity, Vs (m/s) ::

$$V_s = \left(\frac{G_0}{\rho}\right)^{0.50}$$

### :: Undrained peak shear strength, Su (kPa) ::

$$N_{kt} = 10.50 + 7 \cdot log(F_r)$$
 or user defined

$$S_u = \frac{\left(q_t - \sigma_v\right)}{N_{kt}}$$

(applicable only to SBT<sub>n</sub>: 1, 2, 3, 4 and 9 or  $I_c > I_{c\_cutoff}$ )

# :: Remolded undrained shear strength, Su(rem) (kPa) ::

$$S_{u(rem)} = f_s$$
 (applicable only to SBT<sub>n</sub>: 1, 2, 3, 4 and 9 or  $I_c > I_{c\_cutoff}$ )

### :: Overconsolidation Ratio, OCR ::

$$\begin{aligned} k_{OCR} = & \left[ \frac{Q_{tn}^{0.20}}{0.25 \cdot (10.50 \cdot +7 \cdot log(\textbf{F}_r))} \right]^{1.25} \text{ or user defined} \\ OCR = & k_{OCR} \cdot Q_{tn} \end{aligned}$$

(applicable only to SBT<sub>n</sub>: 1, 2, 3, 4 and 9 or  $I_c > I_{c\_cutoff}$ )

### :: In situ Stress Ratio, Ko ::

$$K_0 = (1 - \sin \varphi') \cdot OCR^{\sin \varphi'}$$

(applicable only to SBT<sub>n</sub>: 1, 2, 3, 4 and 9 or I<sub>c</sub> > I<sub>c\_cutoff</sub>)

### :: Soil Sensitivity, St ::

$$S_t = \frac{N_S}{F_r}$$

(applicable only to SBT<sub>n</sub>: 1, 2, 3, 4 and 9 or  $I_c > I_{c\_cutoff}$ )

### :: Effective Stress Friction Angle, φ (°) ::

$$\phi' = 29.5^{\circ} \cdot B_q^{0.121} \cdot (0.256 + 0.336 \cdot B_q + \text{bgQ}_t)$$
(applicable for  $0.10 < B_q < 1.00$ )

### References

- Robertson, P.K., Cabal K.L., Guide to Cone Penetration Testing for Geotechnical Engineering, Gregg Drilling & Testing, Inc., 5<sup>th</sup> Edition, November 2012
- Robertson, P.K., Interpretation of Cone Penetration Tests a unified approach., Can. Geotech. J. 46(11): 1337-1355 (2009)

# **APPENDIX**



**Kehoe Testing and Engineering** 

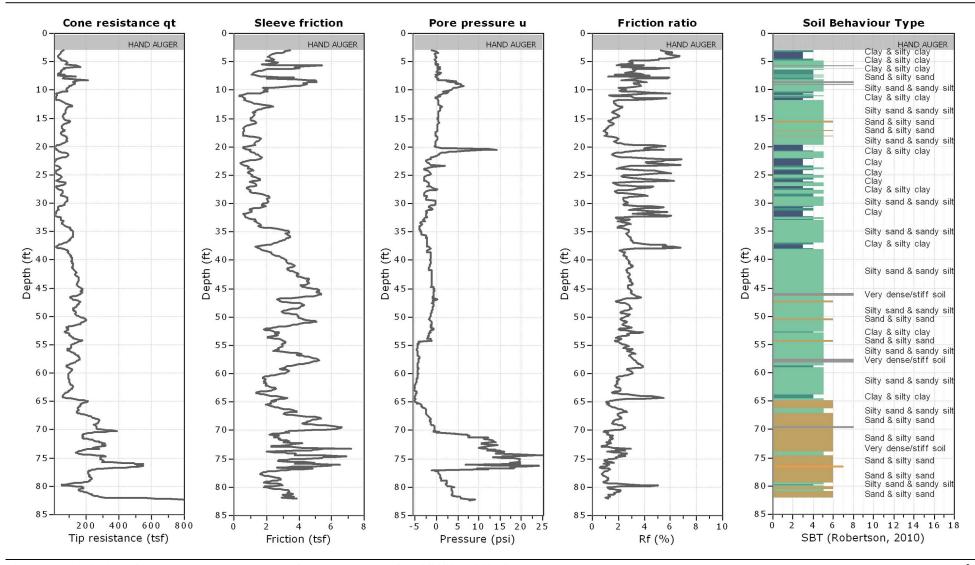
714-901-7270 rich@kehoetesting.com www.kehoetesting.com

Project: Leighton & Associates, Inc.\ Fashion Valley Geot

Location: 123 Camino De Le Reina, San Diego, CA

CPT: CPT-1

Total depth: 82.31 ft, Date: 2/25/2015





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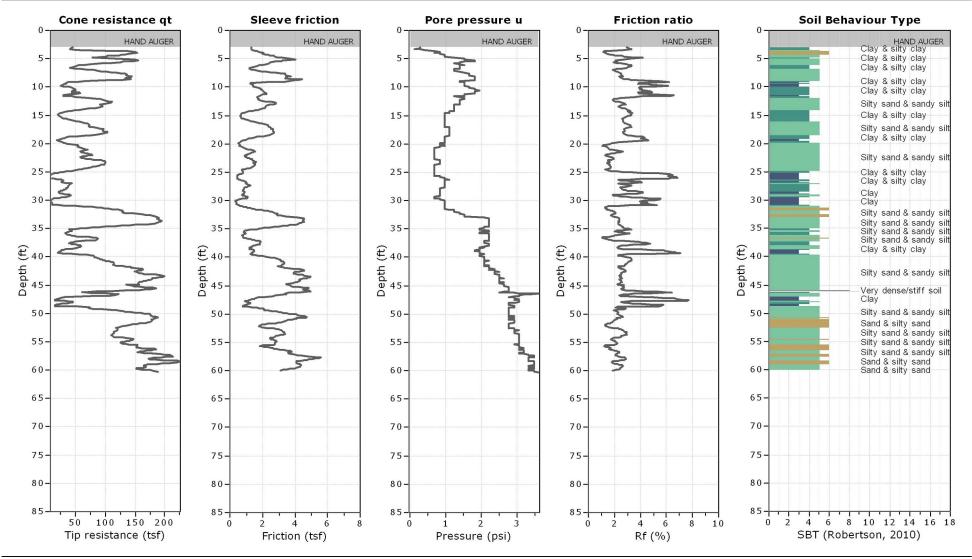
rich@kehoetesting.com www.kehoetesting.com

Project: Leighton & Associates, Inc.\ Fashion Valley Geot

Location: 123 Camino De Le Reina, San Diego, CA

CPT: CPT-2

Total depth: 60.34 ft, Date: 2/25/2015





Kehoe Testing and Engineering 714-901-7270

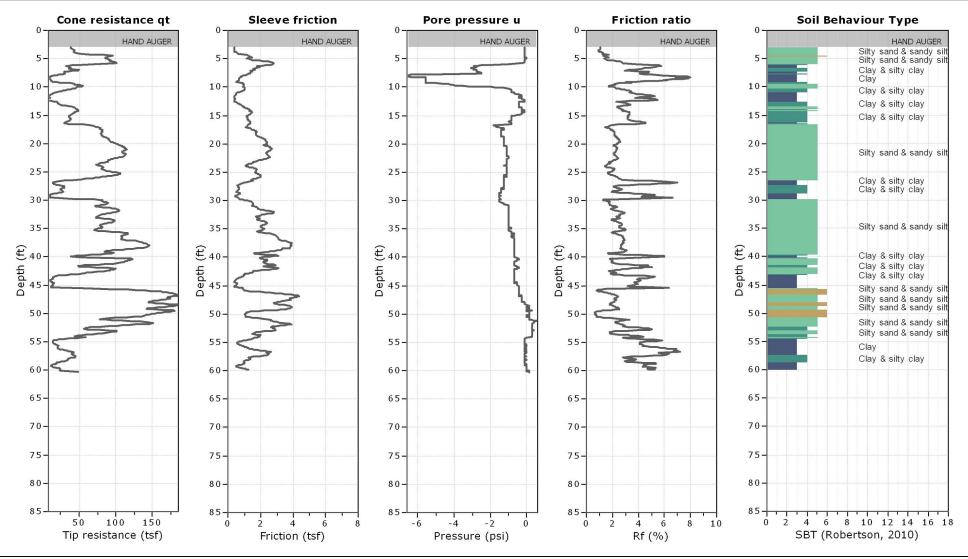
rich@kehoetesting.com www.kehoetesting.com

Project: Leighton & Associates, Inc.\ Fashion Valley Geot

Location: 123 Camino De Le Reina, San Diego, CA

CPT: CPT-3

Total depth: 60.26 ft, Date: 2/25/2015





Kehoe Testing and Engineering 714-901-7270

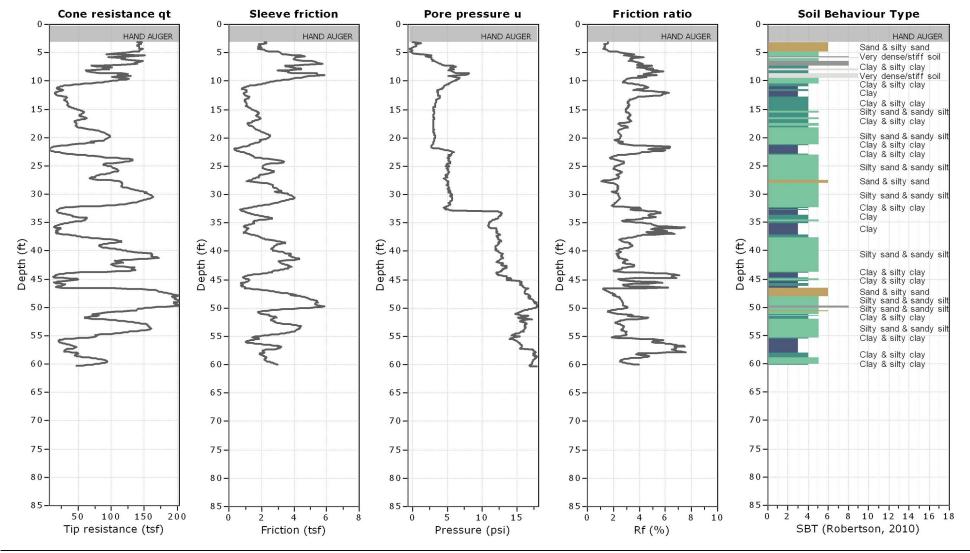
rich@kehoetesting.com www.kehoetesting.com

**Project:** Leighton & Associates, Inc.\ Fashion Valley Geot

Location: 123 Camino De Le Reina, San Diego, CA

CPT: CPT-4

Total depth: 60.37 ft, Date: 2/25/2015





Kehoe Testing and Engineering 714-901-7270 rich@kehoetesting.com

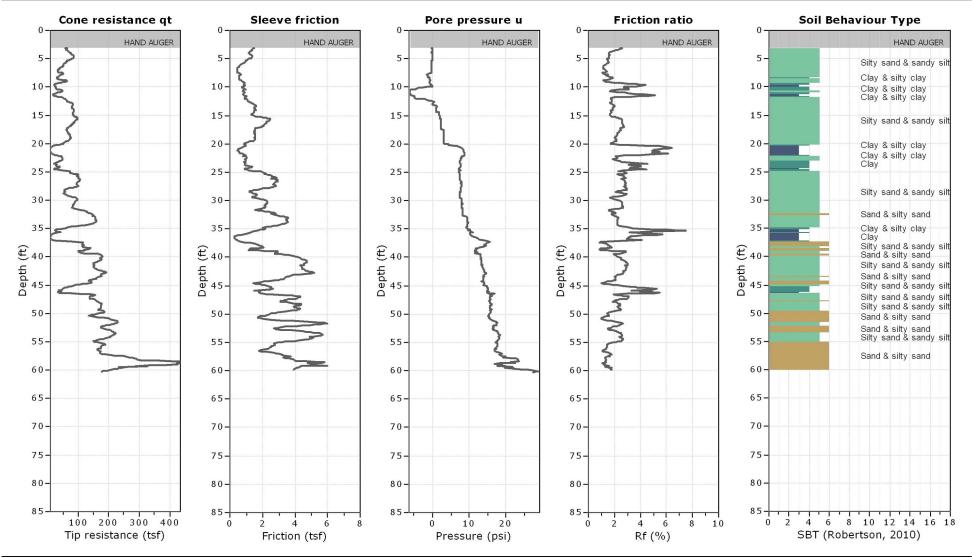
rich@kehoetesting.com www.kehoetesting.com

**Project:** Leighton & Associates, Inc.\ Fashion Valley Geot

Location: 123 Camino De Le Reina, San Diego, CA

CPT: CPT-5

Total depth: 60.27 ft, Date: 2/25/2015





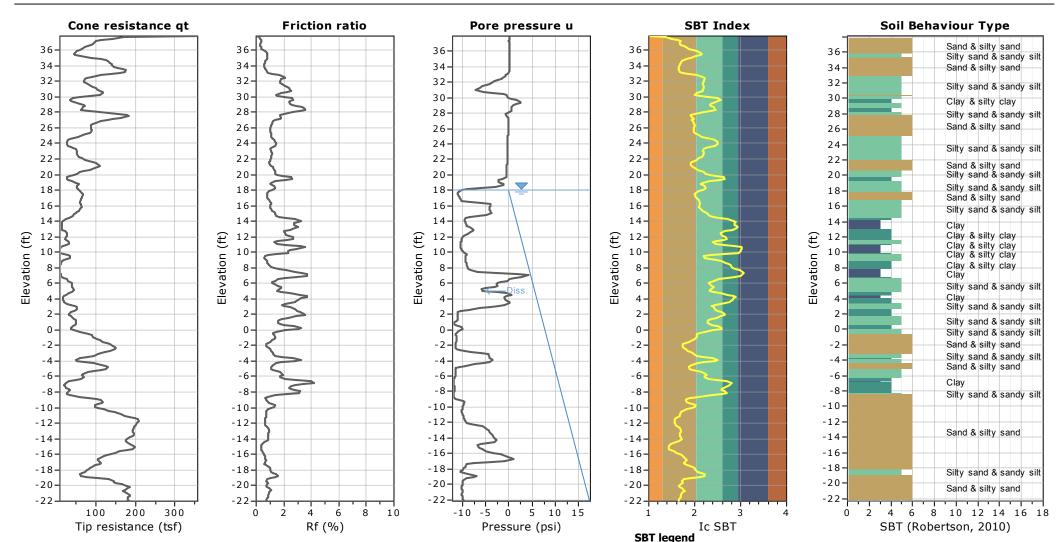
Location: 123 Camino De La Reina, San Diego, CA

Total depth: 60.04 ft, Date: 11/16/2013

Surface Elevation: 38.00 ft Coords: X:0.00, Y:0.00

Cone Type: Vertek

Cone Operator: Kehoe Testing & Engineering



1. Sensitive fine grained

2. Organic material

3. Clay to silty clay

4. Clayey silt to silty clay

5. Silty sand to sandy silt

6. Clean sand to silty sand

7. Gravely sand to sand

9. Very stiff fine grained

8. Very stiff sand to clayey sand

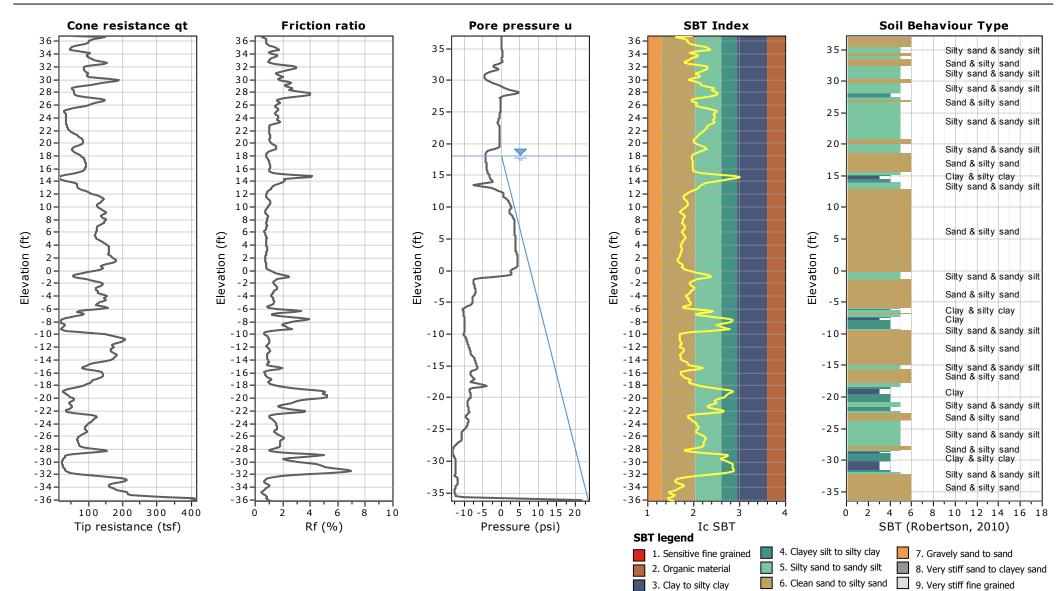
Location: 123 Camino De La Reina, San Diego, CA

3980 Home Avenue San Diego, CA 92109 CPT: CPT-02

Total depth: 73.16 ft, Date: 11/16/2013

Surface Elevation: 37.00 ft Coords: X:0.00, Y:0.00

Cone Type: Vertek

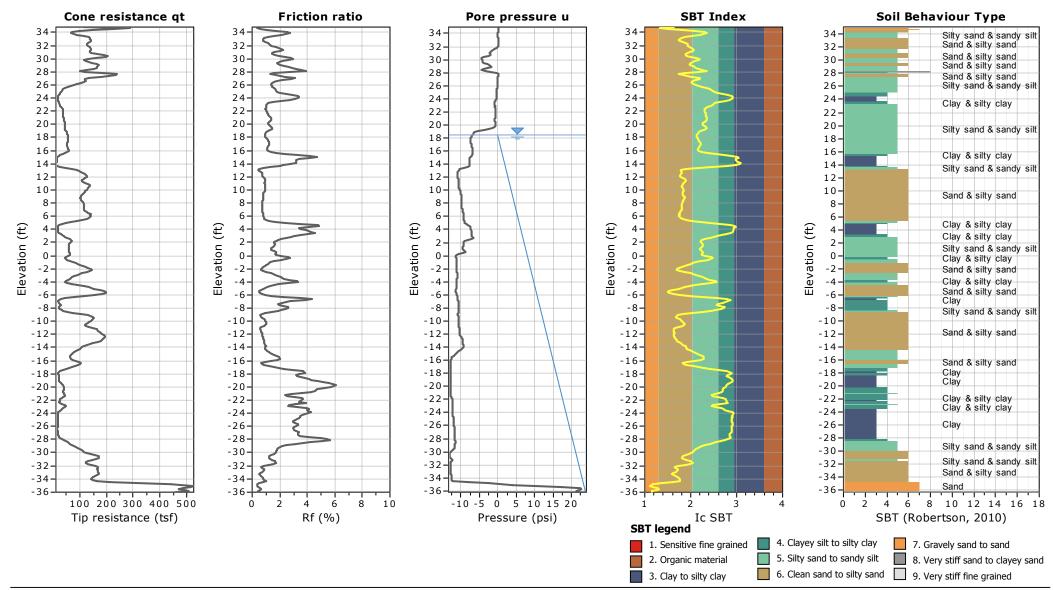


Location: 123 Camino De La Reina, San Diego, CA

Total depth: 71.03 ft, Date: 11/16/2013

Surface Elevation: 35.00 ft Coords: X:0.00, Y:0.00

Cone Type: Vertek

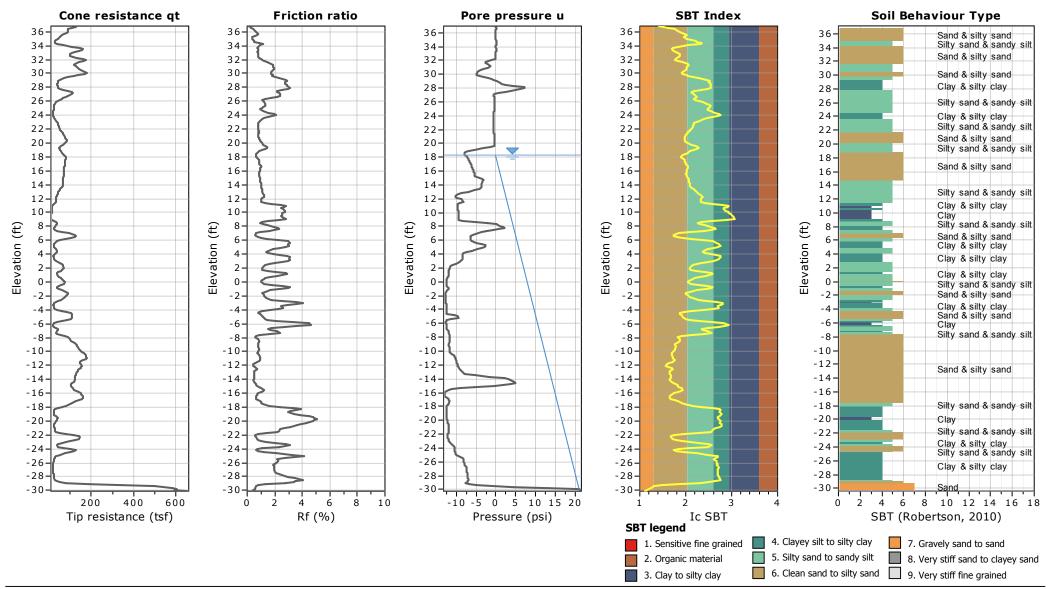


Location: 123 Camino De La Reina, San Diego, CA

Total depth: 67.09 ft, Date: 11/16/2013

Surface Elevation: 37.00 ft Coords: X:0.00, Y:0.00

Cone Type: Vertek



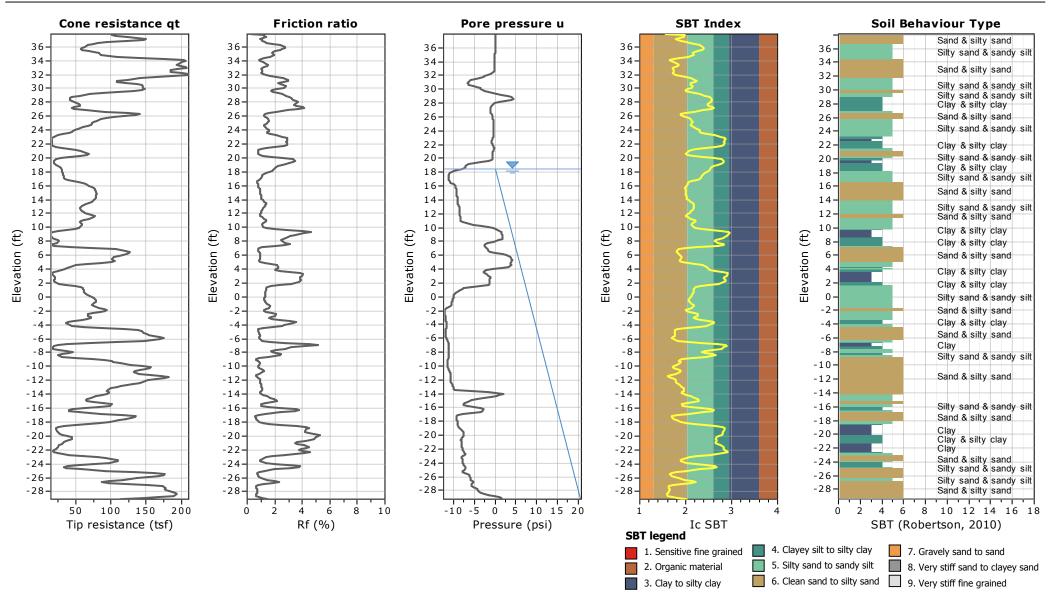
Location: 123 Camino De La Reina, San Diego, CA

3980 Home Avenue San Diego, CA 92109 CPT: CPT-05

Total depth: 67.09 ft, Date: 11/16/2013

Surface Elevation: 38.00 ft Coords: X:0.00, Y:0.00

Cone Type: Vertek



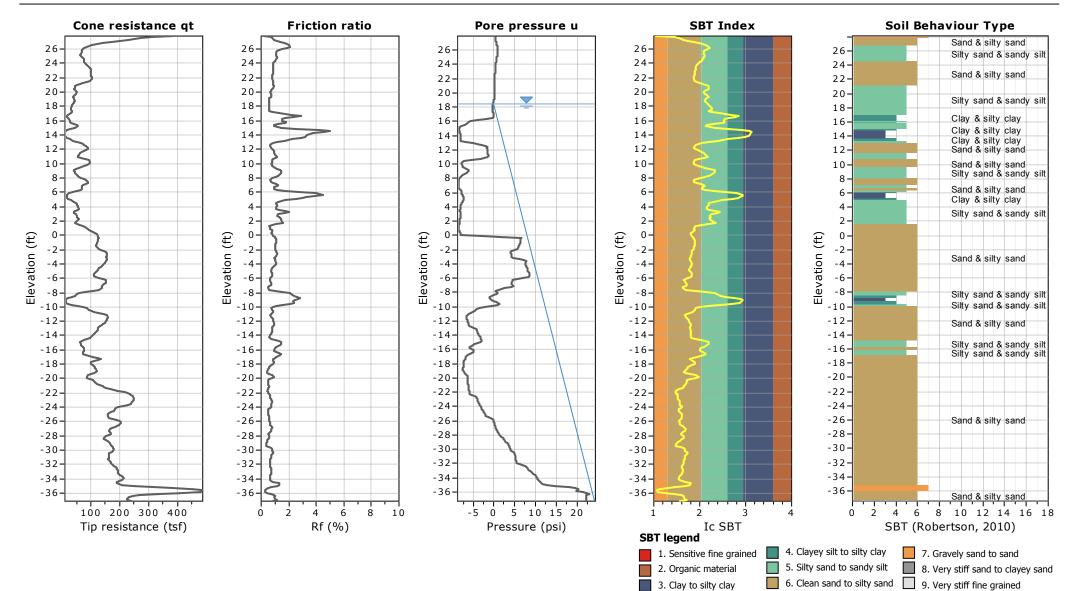
Location: 123 Camino De La Reina, San Diego, CA

Total depth: 65.12 ft, Date: 11/16/2013

Surface Elevation: 28.00 ft Coords: X:0.00, Y:0.00

Cone Type: Vertek

Cone Operator: Kehoe Testing & Engineering



3. Clay to silty clay

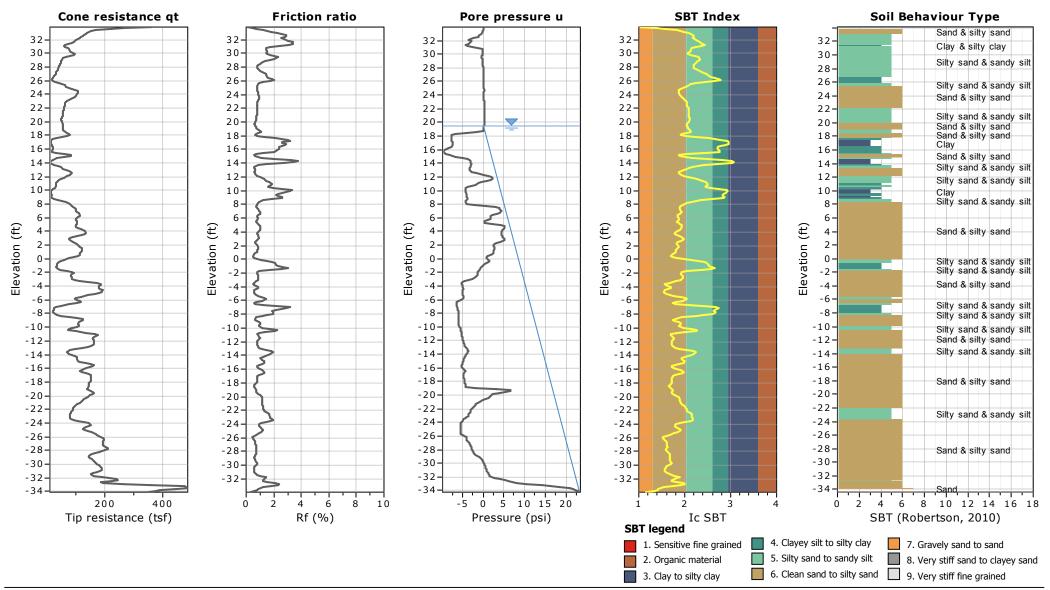
Location: 123 Camino De La Reina, San Diego, CA

3980 Home Avenue San Diego, CA 92109 CPT: CPT-07

Total depth: 68.08 ft, Date: 11/16/2013

Surface Elevation: 34.00 ft Coords: X:0.00, Y:0.00

Cone Type: Vertek



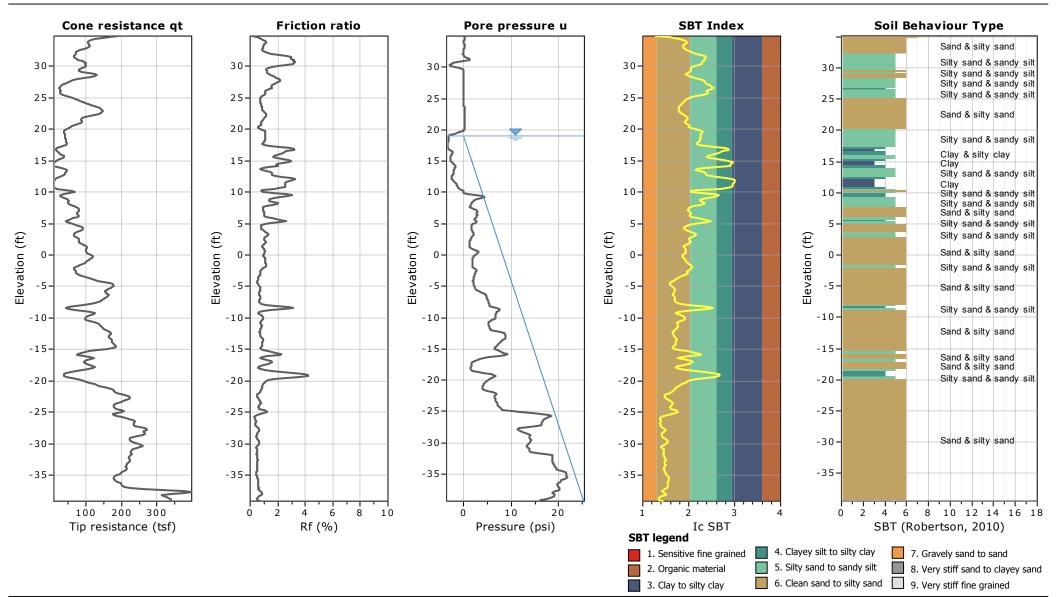
Location: 123 Camino De La Reina, San Diego, CA

3980 Home Avenue San Diego, CA 92109 CPT: CPT-08

Total depth: 74.15 ft, Date: 11/16/2013

Surface Elevation: 35.00 ft Coords: X:0.00, Y:0.00

Cone Type: Vertek



Appendix C
Laboratory Testing Procedures and Test Results

## APPENDIX C

# Laboratory Testing Procedures and Test Results

<u>Moisture and Density Determination Tests</u>: Moisture content and dry density determinations were performed on relatively undisturbed samples obtained from the soil borings. The results of these tests are presented in the boring logs. Where applicable, only moisture content was determined from disturbed samples.

<u>Direct Shear Test</u>: A direct shear test was performed on selected remolded sample which were soaked for a minimum of 24 hours under a surcharge equal to the applied normal force during testing. After transfer of the sample to the shear box and reloading of the sample, the pore pressures set up in the sample (due to the transfer) were allowed to dissipate for a period of approximately 1 hour prior to application of shearing force. The samples were tested under various normal loads utilizing a motor-driven, strain-controlled, direct-shear testing apparatus at a strain rate of 0.05 inches per minute. The test result is presented on the attached figure.

<u>Maximum Dry Density and Optimum Moisture Content Tests:</u> The maximum dry density and optimum moisture content of a selected representative soil sample was evaluated in general accordance with ASTM D 1557. The test results are presented on the attached figures.

<u>Expansion Index Tests:</u> The expansion index of selected materials was evaluated in general accordance with ASTM D 4829. A specimens was molded under a specified compactive energy at approximately 50 percent saturation (plus or minus 1 percent). The prepared 1-inch thick by 4-inch diameter specimen was loaded with a surcharge of 144 pounds per square foot and were inundated with tap water. Readings of volumetric swell were made for a period of 24 hours. The results of test indicated an expansion index of 8 which is classified as Very Low.

# APPENDIX C (Continued)

Minimum Resistivity and pH Tests: Minimum resistivity and pH tests were performed in general accordance with Caltrans Test Method CT643. The results are presented in the table below:

Sample Location	Sample Description	рН	Minimum Resistivity (ohms- cm)
B-3 @ 2-4'	Clayey Sand trace scattered Cobbles, Light Brown	7.28	1,570

<u>Chloride Content</u>: Chloride content was tested in accordance with Caltrans Test Method CT422. The results are presented below:

Sample Location	Sample Description	Chloride Content, ppm
B-3 @ 2-4'	Clayey Sand trace scattered Cobbles, Light Brown	86

<u>Soluble Sulfates</u>: The soluble sulfate contents of selected samples were determined by standard geochemical methods (Caltrans Test Method CT417). The test results are presented in the table below:

Sample Location	Sample Description	Sulfate Content (%)	Potential Degree of Sulfate Attack*
B-3 @ 2-4'	Clayey Sand trace scattered Cobbles, Light Brown	Less than 0.0150	Not Applicable

<sup>\*</sup> Based on the 2011 edition of American Concrete Institute (ACI) Committee 318R, Table No. 4.2.1.

# APPENDIX C (Continued)

<u>Particle/Grain Size Analysis:</u> Particle size analysis was performed by mechanical sieving, wash sieving, and hydrometer methods according to ASTM D422, D 1140, and D6913. The percent fine particles from these analyses are summarized below. Plots of the sieve and hydrometer results are provided on the figures at the end of this Appendix.

Sample	Percent Passing No. 200 Sieve
Campio	1 0100111 000111g 110: 200 01010
B-1 @ 26.5	10
B-1 @ 36.5	19
B-2 @ 16.5	20
B-3 @ 16.5	4
B-4 @ 31.5	18

# COMPACTION TEST

**ASTM D 1557** 



Project Name: FASHION VALLEY Tested By: BCC Date: 26-Mar-2015

Project No.: 10949.001 Calculated By: BCC Date: 3/26/2015

Boring No.: B-1 Depth (ft.): 2.0-5.0

Sample No.: B-1 Notes: Remolded Correc +#4: 2.4%

Sample Description SM: REDDISH-BROWN SILTY SAND

Preparation Method:	Moist	Moist X Mechanic			ınical Ram	
	X Dry	Dry			al Ram	
Mold Volume (ft		0.03308	Ram	Weight 10 L	BS Drop	18 inches
Moisture Ad	ded 0	50	100	150		
TEST NO.	1	2	3	4		
Wt. Comp. Soil + Mold (g)	3678	3872	3972	3950		
Wt. of Mold (g)	1862	1862	1862	1862		AS
Net Wt. of Soil (g)	1816	2010	2110	2088		REC'D
Wet Wt. of Soil + Cont. (g)	497.0	499.1	496.0	504.5		497.0
Dry Wt. of Soil + Cont. (g)	473.5	467.0	455.0	454.1		473.5
Wt. of Container (g)	0.0	0.0	0.0	0.0		0.0
Moisture Content (%)	5.0	6.9	9.0	11.1		5.0
Wet Density (pcf)	121.0	134.0	140.6	139.2		
Dry Density (pcf)	115.3	125.3	129.0	125.3		

Maximum Dry Density (pcf) 129.0 Optimum Moisture Content (%) 9.0

## PROCEDURE USED

## Procedure A

Soil Passing No. 4 (4.75 mm) Sieve Mold: 4 in. (101.6 mm) diameter Layers: 5 (Five)

Blows per layer: 25 (twenty-five) May be used if No. 4 retained <25%

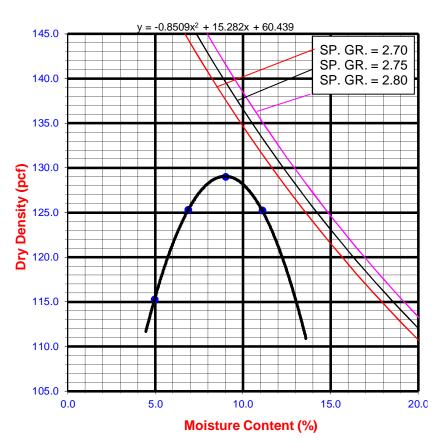
# Procedure B

Soil Passing 3/8 in. (9.5 mm) Sieve Mold: 4 in. (101.6 mm) diameter Layers: 5 (Five)

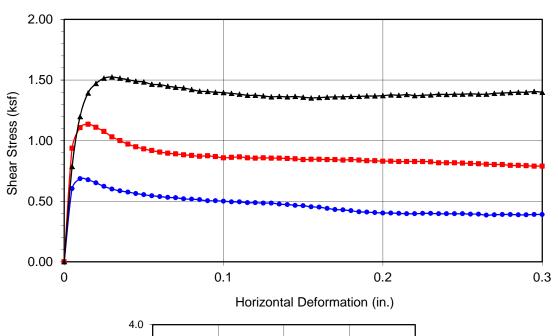
Blows per layer: 25 (twenty-five)
Use if +No. 4 >25% and +3/8 in. <25%

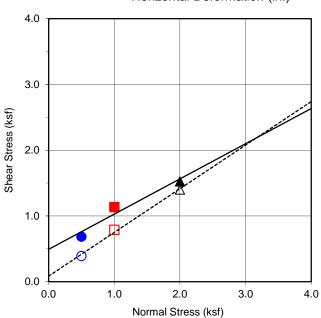
## Procedure C

Soil Passing 3/4 in. (19.0 mm) Sieve Mold: 6 in. (152.4 mm) diameter Layers: 5 (Five)
Blows per layer: 56 (fifty-six)
Use if +3/8 in. >25% and +¾ in. <30%



Rev. 04-08





Boring No.	B-1			
Sample No.	B-1			
Depth (ft)	2.0-5.0			
Sample Type:	90% REMOLD			
Soil Identification: SM: REDDISH-BROWN SILTY SAND				
Strength Parameters				
0.4				

SAND				
Strength Parameters				
C (psf) φ (°)				
Peak	490.0	28.2		
Ultimate	85.0	33.6		

Normal Stress (kip/ft²)	0.500	1.000	2.000
Peak Shear Stress (kip/ft²)	0.685	<b>1.135</b>	▲ 1.525
Shear Stress @ End of Test (ksf)	<b>O</b> 0.390	<b>0.789</b>	△ 1.399
Deformation Rate (in./min.)	0.0500	0.0500	0.0500
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	8.89	8.89	8.89
Dry Density (pcf)	116.4	116.3	116.3
Saturation (%)	53.5	53.5	53.5
Soil Height Before Shearing (in.)	0.9999	0.9940	0.9885
Final Moisture Content (%)	15.1	14.5	13.9



**DIRECT SHEAR TEST RESULTS** 

**Consolidated Undrained** 

Project No.:

10949.001

**FASHION VALLEY** 

03-15

Appendix D Liquefaction Analysis



## GeoLogismiki

Geotechnical Engineers Merarhias 56 http://www.geologismiki.gr

## LIQUEFACTION ANALYSIS REPORT

Project title: Location:

CPT file: CPT-1

## Input parameters and analysis data

Analysis method: Fines correction method: Points to test: Earthquake magnitude M<sub>w</sub>: NCEER (1998) NCEER (1998) Based on Ic value 6.68

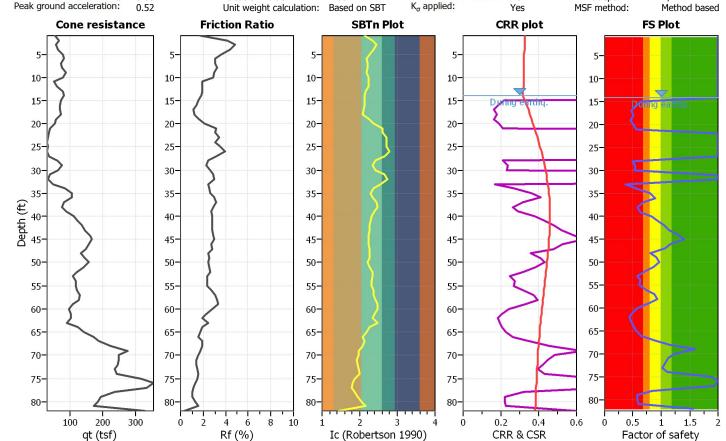
G.W.T. (in-situ): G.W.T. (earthq.): Average results interval: Ic cut-off value:

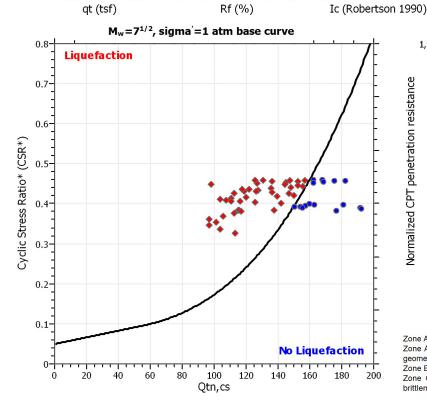
14.00 ft 14.00 ft 2.60

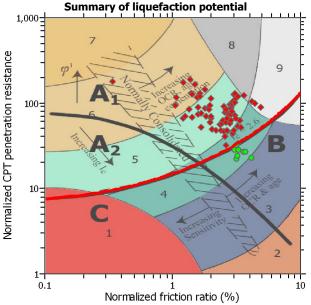
Use fill: No Fill height: Fill weight: Trans. detect. applied:

N/A N/A No  $K_{\sigma}$  applied: Yes

Clay like behavior Sands only applied: Limit depth applied: No Limit depth: N/A MSF method:





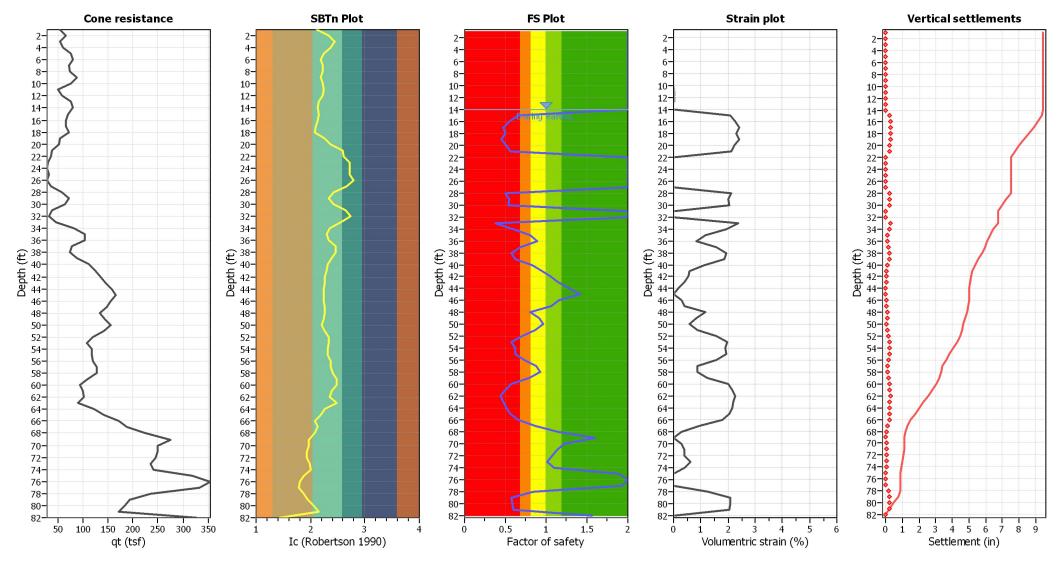


Zone  $A_1$ : Cyclic liquefaction likely depending on size and duration of cyclic loading Zone  $A_2$ : Cyclic liquefaction and strength loss likely depending on loading and ground geometry

Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

This software is licensed to: Leighton CPT name: CPT-1

# Estimation of post-earthquake settlements



#### **Abbreviations**

qt: Total cone resistance (cone resistance qc corrected for pore water effects)

I<sub>c</sub>: Soil Behaviour Type Index

FS: Calculated Factor of Safety against liquefaction

Volumentric strain: Post-liquefaction volumentric strain



## GeoLogismiki

Geotechnical Engineers Merarhias 56 http://www.geologismiki.gr

## LIQUEFACTION ANALYSIS REPORT

Project title: Location:

CPT file: CPT-2

#### Input parameters and analysis data

Analysis method: Fines correction method: Points to test: Earthquake magnitude M<sub>w</sub>:

Peak ground acceleration:

NCEER (1998) NCEER (1998) Based on Ic value 6.68

0.52

G.W.T. (in-situ): G.W.T. (earthq.): Average results interval: Ic cut-off value: Unit weight calculation: Based on SBT

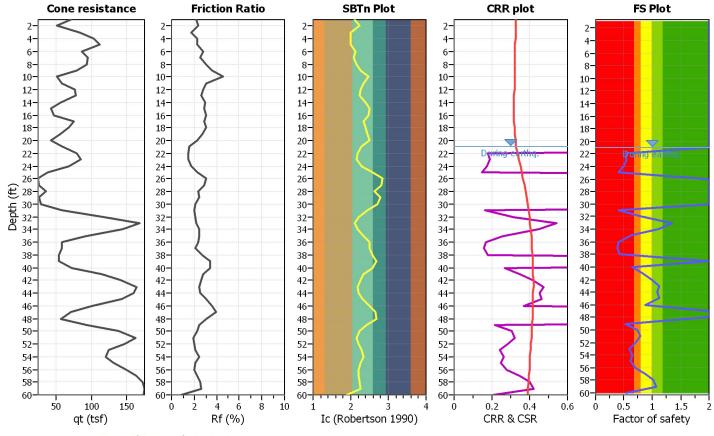
21.00 ft 21.00 ft 2.60

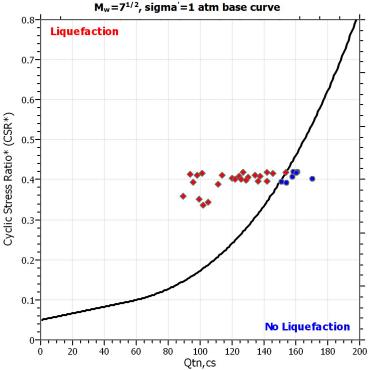
Use fill: No Fill height: N/A Fill weight: N/A Trans. detect. applied: No  $K_{\sigma}$  applied: Yes

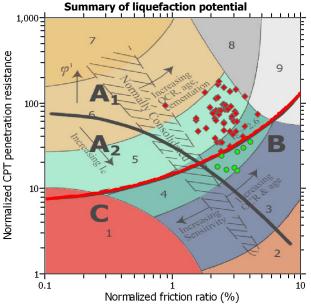
Clay like behavior applied: Sands only Limit depth applied: No Limit depth:

MSF method:

N/A Method based





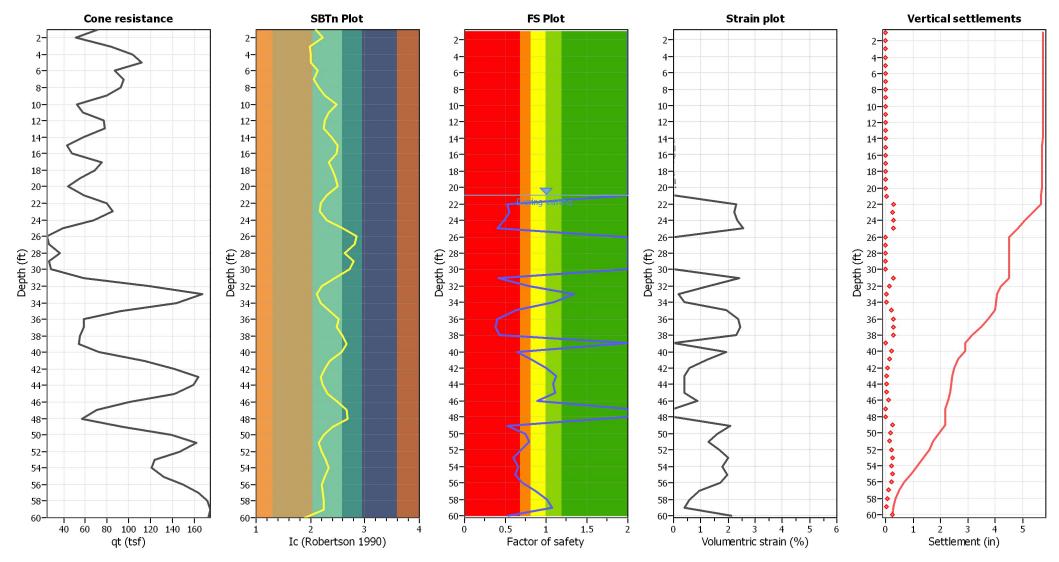


Zone  $A_1$ : Cyclic liquefaction likely depending on size and duration of cyclic loading Zone  $A_2$ : Cyclic liquefaction and strength loss likely depending on loading and ground

Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

This software is licensed to: Leighton CPT name: CPT-2

# Estimation of post-earthquake settlements



#### **Abbreviations**

qt: Total cone resistance (cone resistance qc corrected for pore water effects)

I<sub>c</sub>: Soil Behaviour Type Index

FS: Calculated Factor of Safety against liquefaction

Volumentric strain: Post-liquefaction volumentric strain



## GeoLogismiki

Geotechnical Engineers Merarhias 56 http://www.geologismiki.gr

## LIQUEFACTION ANALYSIS REPORT

Project title: Location:

**CPT file: CPT-3** 

## Input parameters and analysis data

Analysis method: Fines correction method: Points to test: Earthquake magnitude M<sub>w</sub>:

Peak ground acceleration:

NCEER (1998) NCEER (1998) Based on Ic value 6.68

0.52

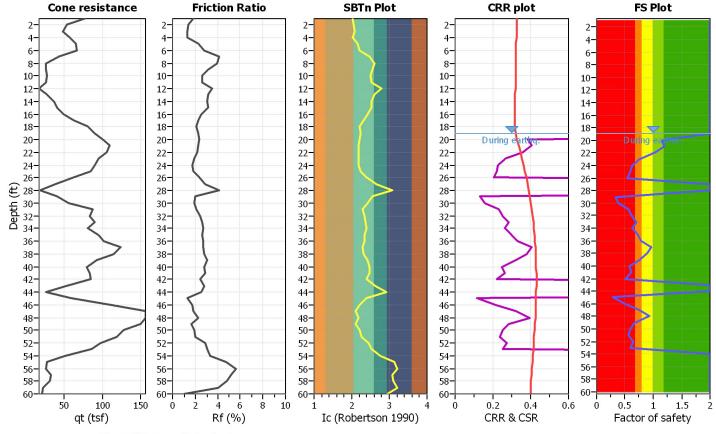
G.W.T. (in-situ): G.W.T. (earthq.): Average results interval: Ic cut-off value: Unit weight calculation: Based on SBT

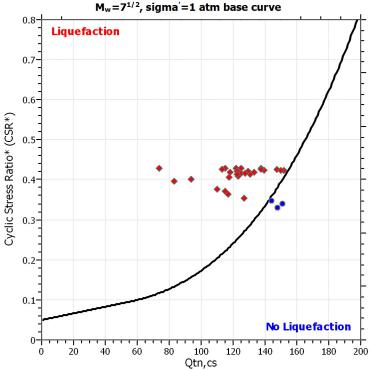
19.00 ft 19.00 ft 2.60

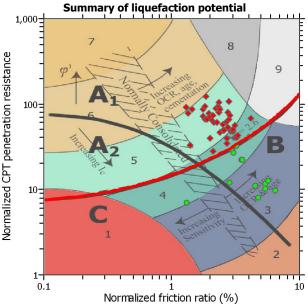
Use fill: No Fill height: Fill weight: Trans. detect. applied:  $K_{\sigma}$  applied:

N/A N/A No Yes

Clay like behavior applied: Sands only Limit depth applied: No Limit depth: N/A MSF method: Method based





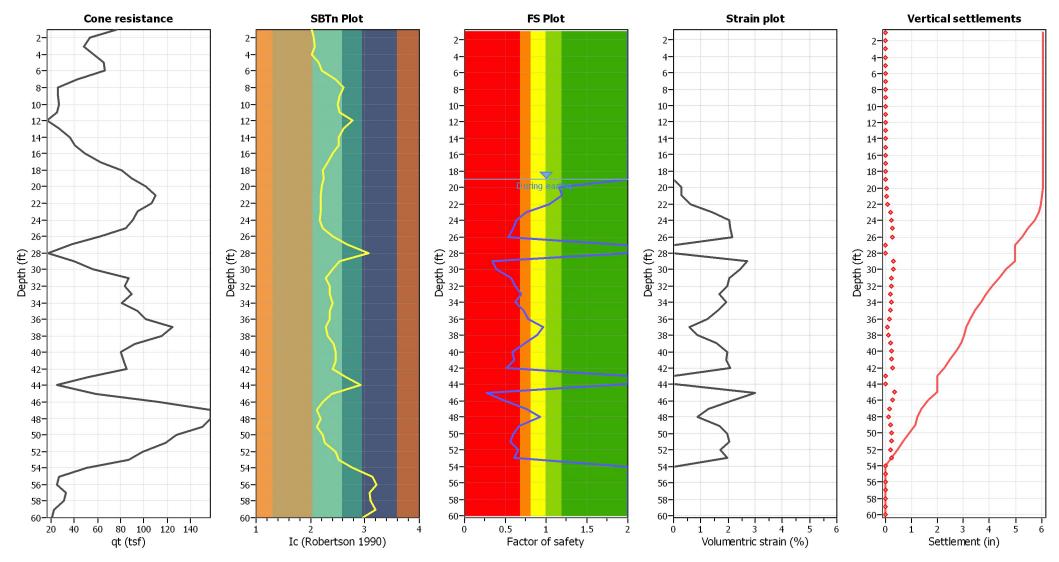


Zone  $A_1$ : Cyclic liquefaction likely depending on size and duration of cyclic loading Zone  $A_2$ : Cyclic liquefaction and strength loss likely depending on loading and ground

Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

This software is licensed to: Leighton CPT name: CPT-3

# Estimation of post-earthquake settlements



#### **Abbreviations**

qt: Total cone resistance (cone resistance qc corrected for pore water effects)

I<sub>c</sub>: Soil Behaviour Type Index

FS: Calculated Factor of Safety against liquefaction

Volumentric strain: Post-liquefaction volumentric strain



## GeoLogismiki

Geotechnical Engineers Merarhias 56 http://www.geologismiki.gr

## LIQUEFACTION ANALYSIS REPORT

Project title: Location:

CPT file: CPT-4

## Input parameters and analysis data

Analysis method: Fines correction method: Points to test: Earthquake magnitude M<sub>w</sub>:

Peak ground acceleration:

NCEER (1998) NCEER (1998) Based on Ic value 6.68

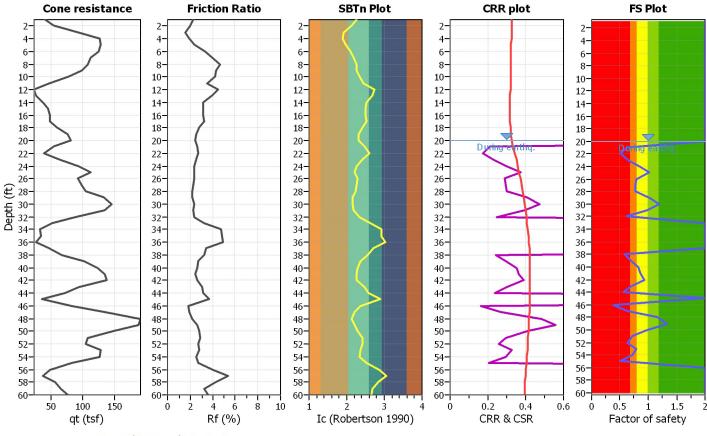
0.52

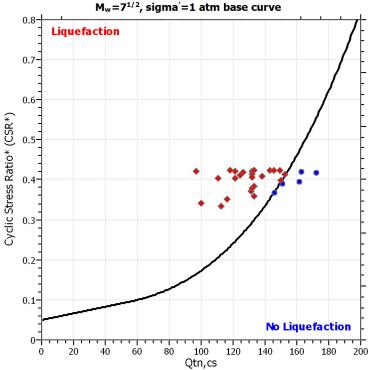
G.W.T. (in-situ): G.W.T. (earthq.): Average results interval: Ic cut-off value:

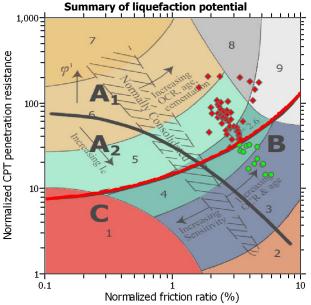
20.00 ft 20.00 ft 2.60 Unit weight calculation: Based on SBT Use fill: No Fill height: N/A Fill weight: N/A Trans. detect. applied: No  $K_{\sigma}$  applied: Yes

Clay like behavior applied: Sands only Limit depth applied: No N/A

Limit depth: MSF method: Method based





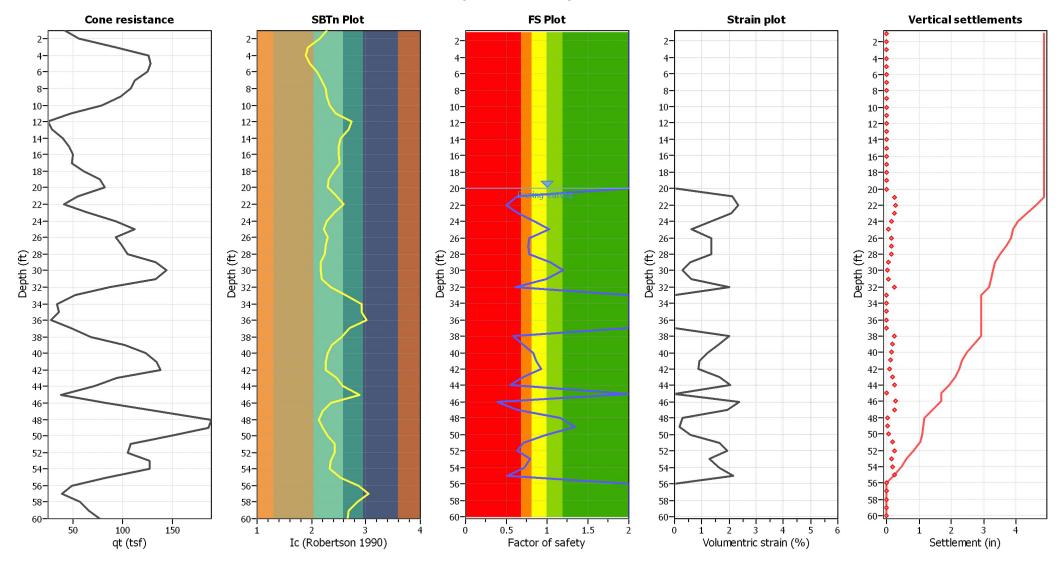


Zone  $A_1$ : Cyclic liquefaction likely depending on size and duration of cyclic loading Zone  $A_2$ : Cyclic liquefaction and strength loss likely depending on loading and ground geometry

Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

This software is licensed to: Leighton CPT name: CPT-4

# Estimation of post-earthquake settlements



#### **Abbreviations**

qt: Total cone resistance (cone resistance qc corrected for pore water effects)

I<sub>c</sub>: Soil Behaviour Type Index

FS: Calculated Factor of Safety against liquefaction

Volumentric strain: Post-liquefaction volumentric strain



## GeoLogismiki

Geotechnical Engineers Merarhias 56 http://www.geologismiki.gr

## LIQUEFACTION ANALYSIS REPORT

Project title: Location:

**CPT file: CPT-5** 

## Input parameters and analysis data

Analysis method: Fines correction method: Points to test: Earthquake magnitude M<sub>w</sub>:

Peak ground acceleration:

NCEER (1998) NCEER (1998) Based on Ic value 6.68

0.52

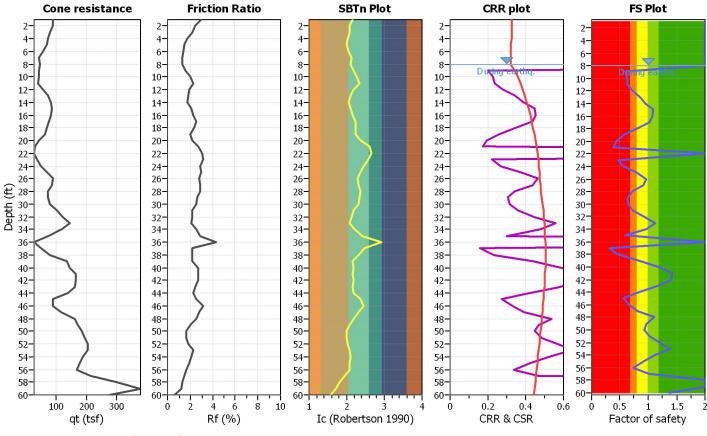
G.W.T. (in-situ): G.W.T. (earthq.): Average results interval: Ic cut-off value: Unit weight calculation: Based on SBT

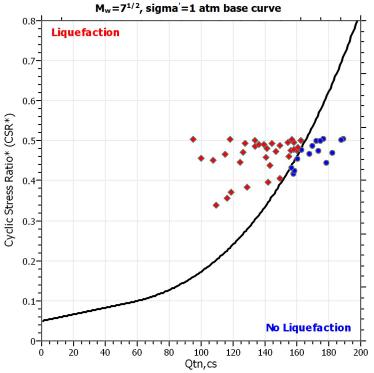
8.00 ft 8.00 ft 2.60

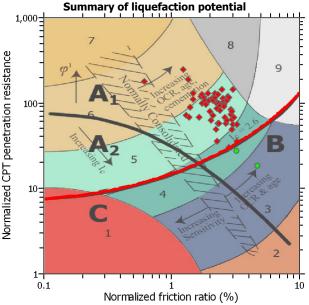
Use fill: No Fill height: N/A Fill weight: N/A Trans. detect. applied: No  $K_{\sigma}$  applied: Yes

Clay like behavior applied: Sands only Limit depth applied: No Limit depth:

N/A MSF method: Method based





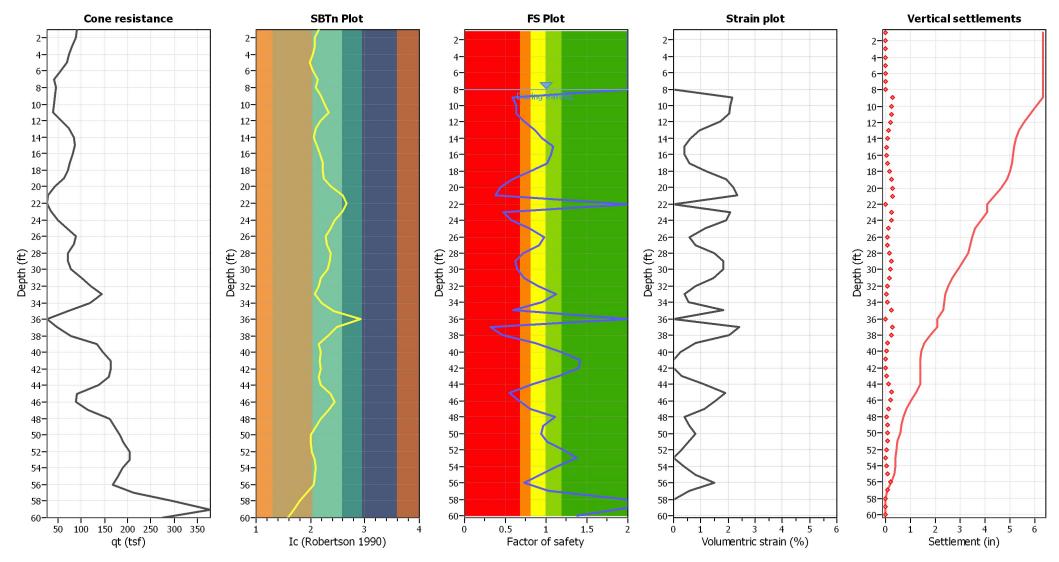


Zone  $A_1$ : Cyclic liquefaction likely depending on size and duration of cyclic loading Zone  $A_2$ : Cyclic liquefaction and strength loss likely depending on loading and ground

Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

This software is licensed to: Leighton CPT name: CPT-5

# Estimation of post-earthquake settlements



#### **Abbreviations**

qt: Total cone resistance (cone resistance qc corrected for pore water effects)

I<sub>c</sub>: Soil Behaviour Type Index

FS: Calculated Factor of Safety against liquefaction

Volumentric strain: Post-liquefaction volumentric strain

Appendix E
General Earthwork and Grading Specifications for Rough Grading

# LEIGHTON AND ASSOCIATES, INC. General Earthwork and Grading Specifications

# 1.0 General

# 1.1 Intent

These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

## 1.2 The Geotechnical Consultant of Record

Prior to commencement of work, the owner shall employ the Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultants shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required. Subsurface areas to be geotechnically observed, mapped, elevations recorded, and/or tested include natural ground after it has been cleared for receiving fill but before fill is placed, bottoms of all "remedial removal" areas, all key bottoms, and benches made on sloping ground to receive fill.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to determine the attained level of compaction. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

# 1.3 The Earthwork Contractor

The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the plans and specifications.

The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "spreads" of work and the estimated quantities of daily earthwork contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate observations and tests can be planned and accomplished. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified.

# 2.0 Preparation of Areas to be Filled

# 2.1 Clearing and Grubbing

Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

# LEIGHTON AND ASSOCIATES, INC. General Earthwork and Grading Specifications

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). No fill lift shall contain more than 5 percent of organic matter. Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed.

# 2.2 Processing

Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until soils are broken down and free of large clay lumps or clods and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

# 2.3 Overexcavation

In addition to removals and overexcavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.

# 2.4 Benching

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical

# LEIGHTON AND ASSOCIATES, INC. General Earthwork and Grading Specifications

Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.

# 2.5 Evaluation/Acceptance of Fill Areas

All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

# 3.0 Fill Material

## 3.1 General

Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

# 3.2 Oversize

Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

# 3.3 Import

If importing of fill material is required for grading, proposed import material shall meet the requirements of Section 3.1. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

# LEIGHTON AND ASSOCIATES, INC. General Earthwork and Grading Specifications

# 4.0 Fill Placement and Compaction

# 4.1 Fill Layers

Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

# 4.2 <u>Fill Moisture Conditioning</u>

Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557).

# 4.3 Compaction of Fill

After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

#### 4.4 Compaction of Fill Slopes

In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557.

# 4.5 Compaction Testing

Field-tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to

# LEIGHTON AND ASSOCIATES, INC. General Earthwork and Grading Specifications

inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

# 4.6 Frequency of Compaction Testing

Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

# 4.7 <u>Compaction Test Locations</u>

The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

# 5.0 <u>Subdrain Installation</u>

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

# 6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

# LEIGHTON AND ASSOCIATES, INC. General Earthwork and Grading Specifications

# 7.0 Trench Backfills

# 7.1 Safety

The Contractor shall follow all OSHA and Cal/OSHA requirements for safety of trench excavations.

# 7.2 Bedding and Backfill

All bedding and backfill of utility trenches shall be performed in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over the top of the conduit and densified. Backfill shall be placed and densified to a minimum of 90 percent of relative compaction from 1 foot above the top of the conduit to the surface.

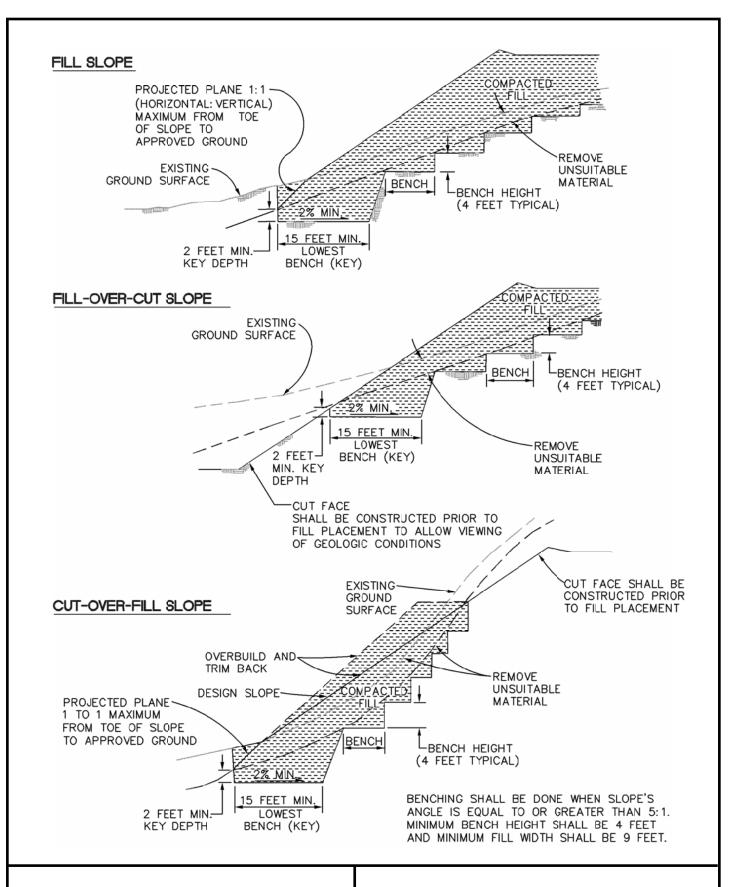
The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.

# 7.3 Lift Thickness

Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.

# 7.4 Observation and Testing

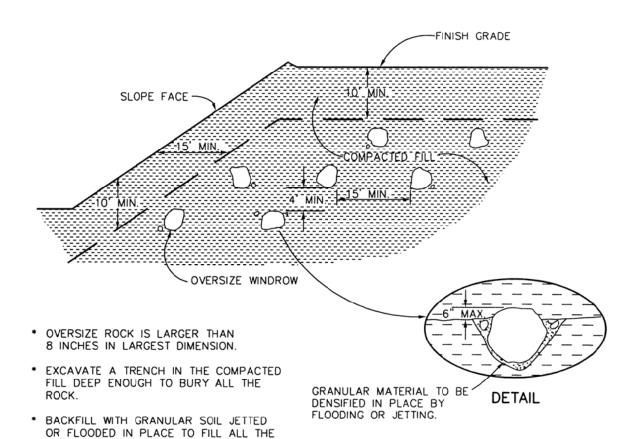
The densification of the bedding around the conduits shall be observed by the Geotechnical Consultant.



**KEYING AND BENCHING** 

GENERAL EARTHWORK AND GRADING SPECIFICATIONS STANDARD DETAIL A



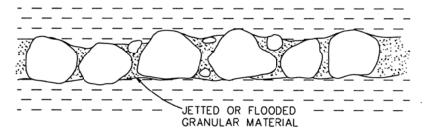


\* WINDROW OF BURIED ROCK SHALL BE PARALLEL TO THE FINISHED SLOPE.

\* DO NOT BURY ROCK WITHIN 10 FEET OF

VOIDS.

FINISH GRADE.

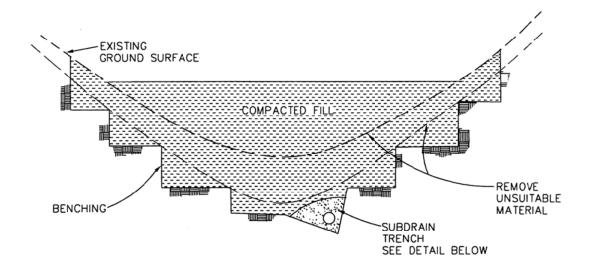


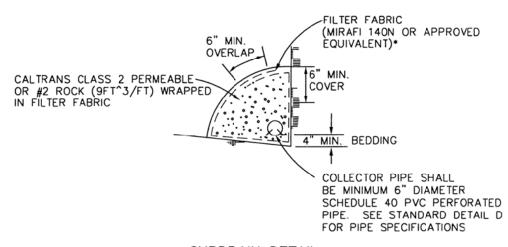
TYPICAL PROFILE ALONG WINDROW

OVERSIZE ROCK DISPOSAL

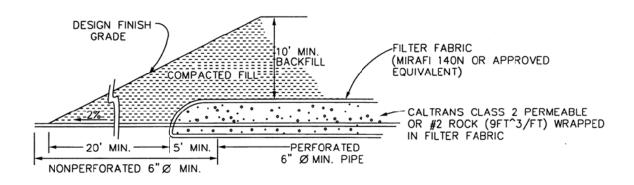
GENERAL EARTHWORK AND GRADING SPECIFICATIONS STANDARD DETAIL B







# SUBDRAIN DETAIL

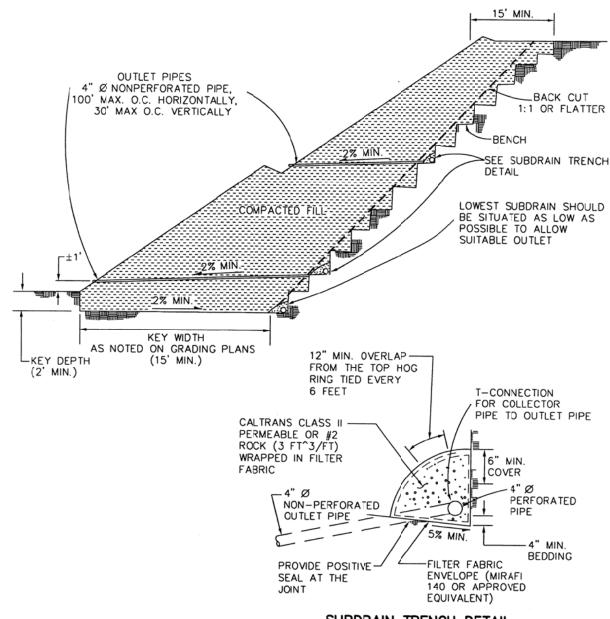


# DETAIL OF CANYON SUBDRAIN OUTLET

**CANYON SUBDRAINS** 

GENERAL EARTHWORK AND GRADING SPECIFICATIONS STANDARD DETAIL C





# SUBDRAIN TRENCH DETAIL

SUBDRAIN INSTALLATION — subdrain collector pipe shall be installed with perforation down or, unless otherwise designated by the geotechnical consultant. Outlet pipes shall be non-perforated pipe. The subdrain pipe shall have at least 8 perforations uniformly spaced per foot. Perforation shall be 1/4" to 1/2" if drill holes are used. All subdrain pipes shall have a gradient of at least 2% towards the outlet.

SUBDRAIN PIPE - Subdrain pipe shall be ASTM D2751, SDR 23.5 or ASTM D1527, Schedule 40, or ASTM D3034, SDR 23.5, Schedule 40 Folyvinyl Chloride Plastic (PVC) pipe.

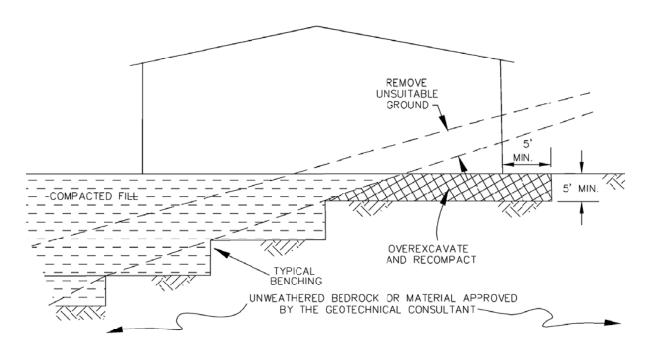
All outlet pipe shall be placed in a trench no wider than twice the subdrain pipe.

BUTTRESS OR REPLACEMENT FILL SUBDRAINS

GENERAL EARTHWORK AND GRADING SPECIFICATIONS STANDARD DETAIL D



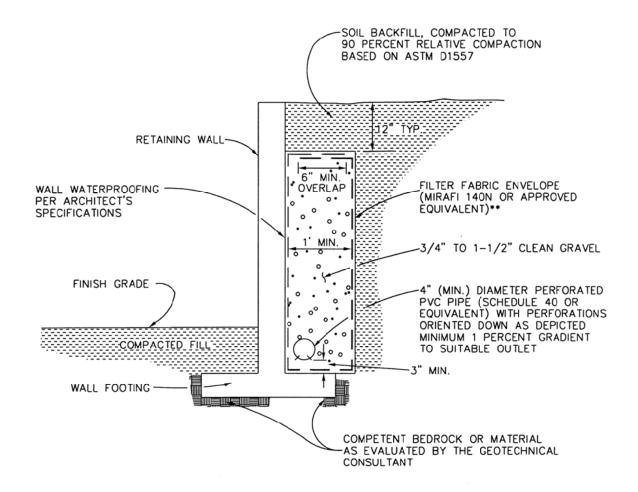
# CUT-FILL TRANSITION LOT OVEREXCAVATION



TRANSITION LOT FILLS

GENERAL EARTHWORK AND GRADING SPECIFICATIONS STANDARD DETAIL E



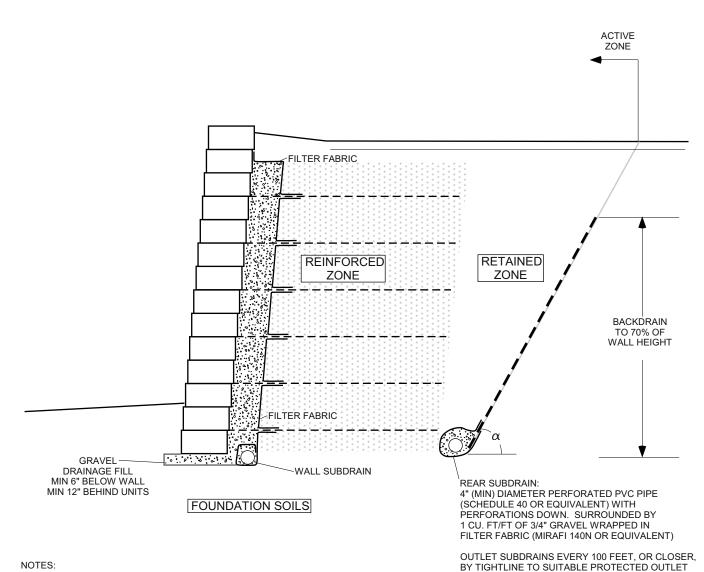


NOTE: UPON REVIEW BY THE GEOTECHNICAL CONSULTANT, COMPOSITE DRAINAGE PRODUCTS SUCH AS MIRADRAIN OR J-DRAIN MAY BE USED AS AN ALTERNATIVE TO GRAVEL OR CLASS 2 PERMEABLE MATERIAL. INSTALLATION SHOULD BE PERFORMED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

RETAINING WALL DRAINAGE

GENERAL EARTHWORK AND GRADING SPECIFICATIONS STANDARD DETAIL F





NOTES:

1) MATERIAL GRADATION AND PLASTICITY

#### REINFORCED ZONE:

SIEVE SIZE	% PASSING
1 INCH	100
NO. 4	20-100
NO. 40	0-60
NO. 200	0-35
OD WALL LIFTCHT	- 10 EEET DI ASTI

FOR WALL HEIGHT < 10 FEET, PLASTICITY INDEX < 20 FOR WALL HEIGHT 10 TO 20 FEET, PLASTICITY INDEX < 10

FOR TIERED WALLS, USE COMBINED WALL HEIGHTS

WALL DESIGNER TO REQUEST SITE-SPECIFIC CRITERIA FOR WALL HEIGHT > 20 FEET

- 2) CONTRACTOR TO USE SOILS WITHIN THE RETAINED AND REINFORCED ZONES THAT MEET THE STRENGTH REQUIREMENTS OF WALL DESIGN.
- 3) GEOGRID REINFORCEMENT TO BE DESIGNED BY WALL DESIGNER CONSIDERING INTERNAL, EXTERNAL, AND COMPOUND STABILITY.
- 3) GEOGRID TO BE PRETENSIONED DURING INSTALLATION.
- 4) IMPROVEMENTS WITHIN THE ACTIVE ZONE ARE SUSCEPTIBLE TO POST-CONSTRUCTION SETTLEMENT. ANGLE  $\alpha$ =45+ $\phi$ /2, WHERE  $\phi$  IS THE FRICTION ANGLE OF THE MATERIAL IN THE RETAINED ZONE.
- 5) BACKDRAIN SHOULD CONSIST OF J-DRAIN 302 (OR EQUIVALENT) OR 6-INCH THICK DRAINAGE FILL WRAPPED IN FILTER FABRIC. PERCENT COVERAGE OF BACKDRAIN TO BE PER GEOTECHNICAL REVIEW.

**SEGMENTAL** RETAINING WALLS

**GENERAL EARTHWORK AND GRADING SPECIFICATIONS** STANDARD DETAIL G

GRAVEL DRAINAGE FILL: SIEVE SIZE

1 INCH

3/4 INCH

NO. 4

NO. 40

NO. 200

% PASSING

100

75-100

0-60

0-50





March 12, 2015

Lawrence W. Howard Trammell Crow Residential Development Manager 5790 Fleet Street, Suite 140 Carlsbad, California 92008

Re: Archaeological Resource Report Form for the Alexan Fashion Valley Project at 123 Camino de la Reina, Fashion Valley, City of San Diego, California

Dear Mr. Howard,

This Archaeological Resource Report Form presents the negative results of a cultural resources study conducted by ASM Affiliates, Inc., (ASM) for the Alexan Fashion Valley Project (Project) at 123 Camino de la Reina, City of San Diego, California. This study was performed in accordance with the California Environmental Quality Act (CEQA) and the City of San Diego Historical Resources Guidelines of the Land Development Manual to determine the presence or absence of potentially significant prehistoric and historic resources or buildings within the Project site.

# I. Project Description and Location

The Project site is approximately 5 acres within the Fashion Valley neighborhood of the City of San Diego. The Project site is located at 123 Camino de la Reina and is bounded on the north and west by Camino de la Reina, on the east by the 163 Freeway (SR 163), and on the south by the SR 163 and Interstate 8 interchange. The Project is shown on the La Jolla USGS 7.5-minute quadrangle within the unsectioned Pueblo Lands of San Diego (Figures 1-3).

The Project will redevelop the Project site including removing the current building and the surrounding pavement. The Project will construct a 240-unit apartment project, miscellaneous amenity areas, and street improvements.

# II. Setting

# Natural Environment

The Project site is currently fully developed, and contains a commercial building with associated landscaping, hardscaping and paved parking areas. The Project site lies within the San Diego River floodplain and prior land uses consist of agriculture.

# Prehistoric Archaeology

The prehistory of San Diego County has most frequently been divided chronologically into three or four major periods. An Early Man stage, perhaps dating back tens of thousands of years, has been proposed, but no widely accepted evidence of human occupation of North America dating prior to about 12,000 B.C. has emerged. More generally accepted divisions include a Terminal Pleistocene/Early Holocene period (ca. 12,000-6000 B.C.), a Middle/Late Holocene period (ca. 6000 B.C.-A.D. 800), and a Late Prehistoric period (ca. A.D. 800-1769).

For the Terminal Pleistocene/Early Holocene period (ca. 12,000-6000 B.C.), the earliest chronologically distinctive archaeological evidence is the Clovis pattern. Dated elsewhere in North America to around 11,500 B.C., Clovis assemblages are distinguished primarily by large fluted projectile points. At least three isolated fluted points have been reported within San Diego County. The most widely recognized archaeological pattern within this period is termed San Dieguito and has been dated from at least as early as 8500 B.C. to perhaps around 6000 B.C. Proposed characteristics to distinguish San Dieguito flaked lithic assemblages include large projectile points, bifaces, crescents, scraper planes, scrapers, hammers, and choppers. A key issue has concerned ground stone, which was originally suggested as having been absent from San Dieguito components but has subsequently been recognized as occurring infrequently within them. It was initially suggested that San Dieguito components, like other Paleo-Indian manifestations, represented the products of highly mobile groups that were organized as small bands and focused on the hunting of large game. However, in the absence of supporting faunal evidence, this interpretation has increasingly been called into question, and it has been suggested that the San Dieguito pattern represented a more generalized, Archaic-stage lifeway, rather than a true Paleo-Indian adaptation. A vigorous debate has continued for several decades concerning the relationship between the San Dieguito pattern and the La Jolla pattern that succeeded it and that may have also been contemporaneous with or even antecedent to it. The issue has been whether the two patterns represent the products of distinct ethnic groups and/or cultural traditions, or different functional poses of the same people.

Archaeological evidence from the Middle/Late Holocene Period (ca. 6000 B.C.-A.D. 800) period in the coastal San Diego region has been characterized as belonging to the Archaic stage, Millingstone horizon, Encinitas tradition, or La Jolla pattern. Distinctive characteristics of the La Jolla pattern include extensive shell middens, portable ground

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stone metates and manos, crudely flaked cobble tools, occasional large expanding-stemmed projectile points (Pinto and Elko forms), and flexed human burials. Investigators have called attention to the apparent stability and conservatism of the La Jolla pattern throughout this long period.

A Late Prehistoric period (ca. A.D. 800-1769) in coastal San Diego County has been distinguished, primarily on the basis of three major innovations: the use of small projectile points, brownware pottery, and the practice of human cremation. Labels applied to the archaeological manifestations of this period include Yuman, Cuyamaca, Patayan, and Hakataya. Traits characterizing the Late Prehistoric period include a shift toward greater use of inland rather than coastal settlement locations, greater reliance on acorns as an abundant but labor-expensive food resource, a greater emphasis on hunting of both large and small game, a greater amount of interregional exchange, more elaboration of nonutilitarian culture, and possibly denser regional populations.

# **Ethnographic Evidence**

In ethnohistoric times, central and southern San Diego County was occupied by speakers of a Yuman language or languages, variously referred to as Kumeyaay, Diegueño, Tipai, and Ipai. Kumeyaay territory extended from south of Agua Hedionda Lagoon, Escondido, and Lake Henshaw to south of Ensenada in northern Baja California, and east nearly as far as the lower Colorado River. A few important ethnohistoric accounts of the Kumeyaay are available from Hispanic-period explorers and travelers, Spanish administrators, and Franciscan missionaries. Many accounts by ethnographers, primarily recorded during the early twentieth century, are available.

The Kumeyaay inhabited a diverse environment that included littoral, valley, foothill, mountain, and desert resource zones. Because of the early incorporation of coastal Kumeyaay into the mission system, most of the available ethnographic information relates to inland groups that lived in the Peninsular Range or the Colorado Desert. There may have been considerable variability among the Kumeyaay in settlement and subsistence strategies and in social organization. Acorns were a key resource, but a wide range of other mineral, plant, and animal resources were exploited, including coastal fish and shellfish. Some degree of residential mobility seems to have been practiced, although its extent and nature may have varied considerably among different communities and settings. The fundamental Kumeyaay social unit above the family was the šimul (patrilineage) and the residential community or band. Leaders performed ceremonial, advisory, and diplomatic functions, rather than judicial, redistributive, or military ones. There seems to have been no national level of political unity and perhaps little sense of commonality within the language group.

Kumeyaay material culture was effective, but it was not highly elaborated. Structures included houses with excavated floors, ramadas, sweathouses, ceremonial enclosures, and acorn granaries. Hunting equipment included bows and arrows, curved throwing sticks, nets, and snares, as well as nets and hooks of bone and shell for fishing. Processing and storage equipment included a variety of flaked stone tools, milling implements, ceramic

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vessels, and baskets. Nonutilitarian culture was not neglected. A range of community ceremonies were performed, with particular emphases placed on making individuals' coming of age and on death and mourning.

#### History

European exploration of the San Diego area was initiated with the maritime expeditions of Juan Rodriguez Cabrillo in 1542 and Sebastián Vizcaíno in 1602. However, the historic period proper did not begin until 1769, when expeditions under the leadership of Gaspar de Portolá and Junípero Serra reached the region from Baja California and passed northward along the coastal plain to seek Monterey. In that year, a royal presidio and the Misión San Diego de Alcalá were founded, and the incorporation of local Kumeyaay into the mission system was begun.

In 1821, Mexico consummated its independence from Spain, and the region became more open to outside visitors and influences. The missions were secularized in 1833. Native Americans released from the San Diego mission returned to their native villages, moved east to areas lying beyond Mexican control, or sought work on ranchos or in the town of San Diego. Numerous large land grants were issued to private owners during the Mexican period.

The conquest and annexation of California by the United States in the Mexican-American War between 1846 and 1848 ushered in many more changes. Many Californio families lost their lands to outsiders, and cultural patterns that were brought by immigrants from the eastern U.S. gradually supplanted old Californio customs. The region experienced cycles of economic and demographic booms and busts. Aspects of development included the creation of transportation networks based on port facilities, railroads, highways, and airports; more elaborate systems of water supply and flood control; grazing livestock and growing a changing array of crops; supporting military facilities; limited amounts of manufacturing; and accommodating visitors and retirees. After false starts, San Diego converted itself to a substantial city, and then into a metropolis, with exceptionally wide civic boundaries encompassing such suburbs as Ocean Beach, Pacific Beach, Clairemont, and La Jolla. Other cities were incorporated in the coastal region, including National City, Coronado, Chula Vista, Imperial Beach, Del Mar, Solana Beach, and Encinitas.

# III. Area of Potential Affect (APE)

The APE consists of the Project site at 123 Camino de la Reina, as shown on Figures 2 and 3.

# IV. Study Methods

Methods used to assess the presence or absence of cultural resources within the property included a search of existing records and an intensive field survey. The records search was conducted at the South Coastal Information Center (SCIC) on February 19, 2015

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(Appendix A). The search included the Project site and a radius of 1/4 mile (mi.) around it. A records search of the Sacred Lands File held by the Native American Heritage Commission (NAHC) was requested on February 19, 2015 (Appendix B). Historic aerial photographs and historic USGS topographic maps of the Project site were consulted from historicaerials.com and the USGS Historic Topographic Map Explorer, respectively.

The field survey was conducted on February 20, 2015, by ASM Senior Archaeologist Shelby Castells. Field methods consisted of a pedestrian survey of the Project site by the archaeologist in transects spaced at 15-m intervals. As the Project site is developed and paved, any visible soil was examined for cultural resources. All elevations of the building within the Project site were photographed.

# V. Study Results

#### Background Research

#### SCIC Records Search Results

Twenty-eight reports have addressed cultural resource studies within a 1/4-mi. radius of the Project. Six of the reports have addressed a portion of the Project site. All of the Project site has been previously surveyed for cultural resources. Descriptions of the cultural resource studies within the records search radius are provided in Table 1.

Table 1. Previous Cultural Resources Reports Addressing the Project Area and 1/4-Mile Records Search Radius

Report Number	Authors	Date	Title	Relation to the Project Area
SD- 00546	Cupples, Sue Ann	1975	An Archaeological Survey of the San Diego River Valley	Intersect
SD- 02069	City of San Diego	1984	Draft Environmental Impact Report Atlas Hotel Specific Plan	Outside
SD- 02825	City of San Diego	1991	Proposed Mitigated Negative Declaration for East Linda Vista Trunk Sewer, San Diego, CA	Outside
SD- 03556	Gilmer, Jo Anne and Dayle M. Cheever	1997	Results of an Archaeological Monitoring of the North Mission Valley Interceptor Sewer Replacement Phase II, San Diego, CA	Outside
SD- 04690	Brown, Joan	1996	Archaeological Monitoring of Excavation During Construction of the East Linda Vista Trunk Sewer Project, Dept. No 91-0684	Outside
SD- 04868	Kinnetic Laboratories Incorporated	1996	Environmental Assessment for the North Mission Valley Interceptor Sewer Phase II	Outside
SD- 05008	Caltrans	2000	Historic Property Survey Report for an Interstate 5 and Stage Route 163 Pavement Rehabilitation Project	Outside
SD- 05196	Brown, Joan	1997	Environmental Assessment for the North Mission Valley Interceptor Sewer Phase II	Outside
SD- 05238	Gilmer, JoAnne and Dayle M. Cheever	1997	Results of Archaeological Monitoring of the North Mission Valley Interceptor Sewer Replacement Phase II	Outside

Report Number	Authors	Date	Title	Relation to the Project Area
SD- 05674	Pigniolo, Andrew	1991	Cultural Resource Testing and Evaluation for the Mission Valley West Light Rail Transit Project, San Diego, California	Outside
SD- 07335	Caltrans	2000	Historic Property Survey Report for an Interstate 5 and State Route 163 Pavement Rehabilitation Project	Outside
SD- 07541	Robbins-Wade, Mary	1990	Cultural Resources Inventory for the Hoffman Canyon Sewer Project, San Diego	Intersect
SD- 08820	McGinnis, Patrick	2003	Cultural Resource Survey for the Proposed Van Nuys Canyon Sewer Canyon Access Project, San Diego California	Outside
SD- 09007	Rosen, Martin D.	2004	Historical Resources Compliance Report for the Implementation of a Corridor Management Plan on State Route 163 Through Balboa Park, City of San Diego, CA	Outside
SD- 10012	Robbins-Wade, Mary	2005	Historic Property Survey Report SR 163 / Friars Road Interchange, San Diego, CA	Intersect
SD- 10444	May, Vonn Marie	2005	Uptown Historic Architectural and Cultural Landscape Reconnaissance Survey	Outside
SD- 10551	Arrington, Cindy	2006	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project, State of California	Outside
SD- 11810	Price, Harry J., and Jackson Underwood	2008	Results of a Historical Resources Survey of a Portion of the Hazard Center Redevelopment Project, San Diego, CA	Outside
SD- 11826	Robbins-Wade, Mary	2008	Archaeological Resources Analysis for the Master Storm Water System Maintenance Program, San Diego, CA	Outside
SD- 12200	Herrmann, Myra	2009	Draft Environmental Impact Report for the Master Storm Water System Maintenance Program	Intersect
SD- 12425	Rosen, Martin	2009	Historic Property Survey Report for the construction of a Multiuse Bicycle and Pedestrian Path in Mission Valley, San Diego, CA	Outside
SD- 12426	Case, Robert	2009	Phase I Archaeological Survey for the San Diego River Multi-Use Bicycle and Pedestrian Path Project, Mission Valley Community Planning Area, City of San Diego, CA	Outside
SD- 12637	Shearer-Nguyen, Elizabeth	2010	State Route 163 / Friars Road Interchange Project	Intersect
SD- 13006	Robbins-Wade, Mary	2011	Master Storm Water System Maintenance Program	Outside
SD- 13202	Rosen, Martin	2011	Cultural Resources Technical Assessment for the Program Environmental Impact Report for the San Diego River Mark Master Plan, City of San Diego, CA	Outside
SD- 13918	City of San Diego	2012	The San Diego River Park Master Plan	Outside
SD- 13956	Robbins-Wade, Mary	2003	Archaeological Resources Inventory for the Hazard Center Drive Extension Project, San Diego, CA	Outside
SD- 13987	Prouty, Michael	2013	An Archaeological Overview of the San Diego River Watershed, San Diego County, CA	Intersect

The records search indicated that no previously recorded cultural resources are located within the Project site. Five cultural resources have been previously recorded within the

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1/4-mi. records search radius (Table 2). The previously recorded cultural resources consist of historic trash scatters, historic isolates, and the SR 163 bridge.

Table 2. Previously Recorded Cultural Resources within the Project Site and the 1/4-Mile Records Search Radius

Resource Number	Recorder, Date	Contents	Relation to the Project Site
SDI-19636	Davidson, 2008	AH4. Trash Scatter	Outside
SDI-19631	Davidson, 2008	AH4. Trash Scatter	Outside
P-37-029807	Robbins Wade and Van Wormer, 2008	HP19. Bridge – SR 163	Outside
P-37-030928	Davidson, 2007	Historic Isolate	Outside
P-37-030929	Davidson, 2007	Historic Isolate	Outside

No historic addresses have been previously recorded within the Project site. Two historic addresses, Interstate 8 Mission Valley Freeway Bridge (Caltrans Bridge 57-0239F) and the SR 163 Cabrillo Freeway Bridge (Caltrans Bridge 57-0126) are on file at the SCIC within the 1/4-mi, records search radius.

#### NAHC Records Search Results

The NAHC responded on March 3, 2015 that the record search of the Sacred Land File failed to indicate the presence of Native American cultural resources in the immediate Project site. The NAHC provided a list of Native American individuals and organizations for the City's use who may have additional knowledge of cultural resources within the Project site. All correspondence pertaining to the NAHC is included in Appendix B.

#### Historical Research

The 1953 aerial photograph of the Project site shows the northern portion of the Project site, now a parking lot, as being part of the bed of the San Diego River. The southern portion of the Project site contained two buildings and is possibly being used for agriculture (Historicaerials.com 2015). On the 1964 aerial photograph, the northern portion of the Project site was still part of the San Diego River bed. Within the southern portion of the Project site, the buildings had been removed and the land was cleared, probably for agricultural use (Historicaerials.com 2015). The 1966 aerial photograph shows no change in land use since the 1964 aerial photograph (Historicaerials.com 2015). The 1980 aerial photograph shows the current land use on the Project site, consisting of the commercial building at 123 Camino de la Reina, the parking lots to the north and south of the building, and the associated landscaping (Historicaerials.com 2015).

The 1903 La Jolla 1:62,500 USGS Quadrangle Map, the 1904 Southern California USGS 1:250000 Quadrangle Map, the 1930 La Jolla 1:62,500 USGS Quadrangle map, the 1943 La Jolla 1:31,680 USGS Quadrangle map, and the 1950 San Diego 1:250,000 USGS

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Quadrangle map show the Project site as being within the San Diego River bed (USGS Historical Topographic Map Explorer 2015). The 1953 La Jolla 1:24,000 USGS Quadrangle map shows the channelization of the San Diego River, although the Project site is still within the floodplain of the river. It also shows that Camino Del Rio / Highway 80 (currently the location of Interstate 8) and the 6<sup>th</sup> Street Extension (currently SR 163) had been constructed, bounding the Project site to the east and south. It also shows one building present within the Project site (USGS Historical Topographic Map Explorer 2015). The 1967 La Jolla 1:24,000 USGS Quadrangle map shows that the Project site was still vacant in 1967 and within the San Diego River floodplain (USGS Historical Topographic Map Explorer 2015). The 1975 La Jolla USGS Quadrangle map shows that the building within the Project site had been constructed along with Camino de la Reina to the north and west of the Project site (USGS Historical Topographic Map Explorer 2015).

# Field Reconnaissance

The Project site is entirely developed and houses the commercial building at 123 Camino de la Reina, two associated parking lots, landscaping and hardscaping (Figures 4-7). Ground surface visibility across the Project site was poor to nonexistent due to the presence of the building, landscaping, hardscaping, and pavement. The Project site appears to have been extensively graded during the construction of the building, Camino de la Reina to the west and north, SR 163 to the east, and Interstate 8 to the south. No archaeological resources were identified within the Project site as a result of the pedestrian survey.

The building at 123 Camino de la Reina was constructed in 1973, and therefore does not meet the age threshold for eligibility to the CRHR or the Local Register.

#### VI. Recommendations

No cultural resources were identified within the Project site in the records search nor during the pedestrian field survey. A review of the historic maps and historic aerial photographs show that the Project site was within the San Diego River bed prior to the river being channelized and subsequently within the San Diego River floodplain.

Current ground surface visibility was poor across the Project site. Because the Project site is located within the alluvial floodplain of the San Diego River, there is the potential for buried subsurface cultural resource deposits. Two archaeological sites and two isolates have been previously recorded within the 1/4-mi. records search surrounding the Project site. Archaeological monitoring is recommended in areas of the Project site not impacted by the construction of the building at 123 Camino de la Reina, such as the landscaped areas and parking lots surrounding the building.

The commercial building at 123 Camino de la Reina was constructed in 1973 and therefore fails to meet the age threshold for eligibility under CEQA for listing on the CRHR and the Local Register and no further work is recommended.

# VII. Sources Consulted

Source	Date
National Register of Historic Places	February 2015
California Register of Historical Resources	February 2015
City of San Diego Historical Resources Register	February 2015
South Coastal Information Center	February 2015
Historicaerials.com	March 2015
USGS Historical Topographic Map Explorer	March 2015
Native American Heritage Commission	March 2015

# VIII. Certification

Preparer: Shelby G. Castells, M.A., RPA	Title: Senior Archaeologist
Signature:	Date: March 12, 2015
Shelly G. Castello	

# IX. Attachments

# National Archaeological Data Base Information

Author: Shelby G. Castells, M.A., RPA

Firm: ASM Affiliates, Inc.

Client: Trammell Crow Residential

Report Date: March 2015

Report Title: Archaeological Resource Report Form for the Alexan Fashion

Valley Project at 123 Camino de la Reina, Fashion Valley, City

of San Diego, California

Type of Study: Phase I Archaeological Survey

New Sites: none

Updated Sites: none

USGS Quad: Del Mar 7.5-minute

Acreage: 5 acres

Keywords: Del Mar 7.5-minute quadrangle, 123 Camino de la Reina

# Figures and Appendices

Figure 1. Project vicinity.

Figure 2. Project location, shown on the USGS Del Mar 7.5' Quadrangle map

and aerial photograph.

Figure 3. Project location, shown on the City of San Diego 1":800' map.

Figure 4. Project site, facing north. Figure 5. Project site, facing southeast. Figure 6. Project site, facing south.

Figure 7. Project site, facing north.

Appendix A. SCIC Records Search Confirmation

Appendix B. NAHC Correspondence

# Bibliography

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# Jones, Terry L., and Kathryn A. Klar (editors)

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#### Kroeber, A. L.

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2008 Historic Period. In *Prehistoric and Historic Archaeology of Metropolitan San Diego: A Historic Properties Background Study*, pp. 241-298. ASM Affiliates, Carlsbad, California.

# USGS Historical Topographic Map Explorer

Lawrence W. Howard March 12, 2015 Page 12 of 19

2015 123 Camino de la Reina, San Diego, California. USGS Historic Topographic Maps. <a href="http://historicalmaps.arcgis.com/usgs/">http://historicalmaps.arcgis.com/usgs/</a>. Accessed March 4, 2015.

Warren, Claude N., Gretchen Siegler, and Frank Dittmer

2008 Paleo-Indian and Early Archaic Periods. In *Prehistoric and Historic Archaeology of Metropolitan San Diego: A Historic Properties Background Study*, pp. 13-107. ASM Affiliates, Carlsbad, California.



Figure 1. Project vicinity map.

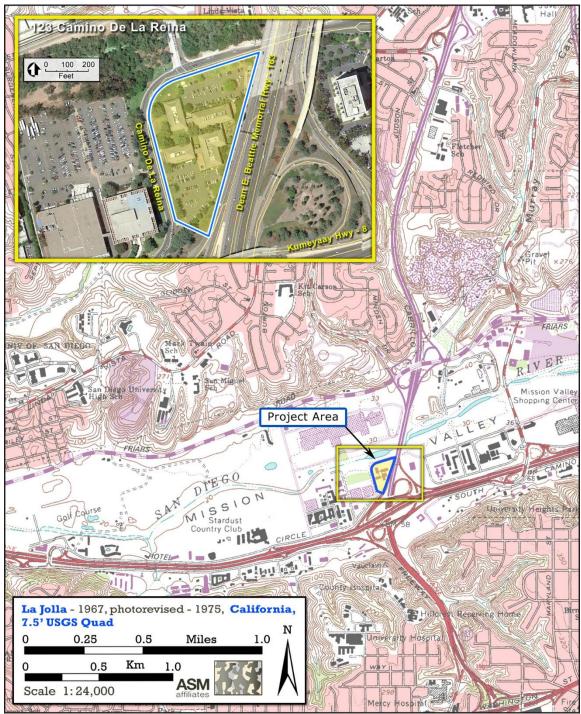


Figure 2. Project location, shown on the USGS Del Mar 7.5' Quadrangle map and aerial photograph.

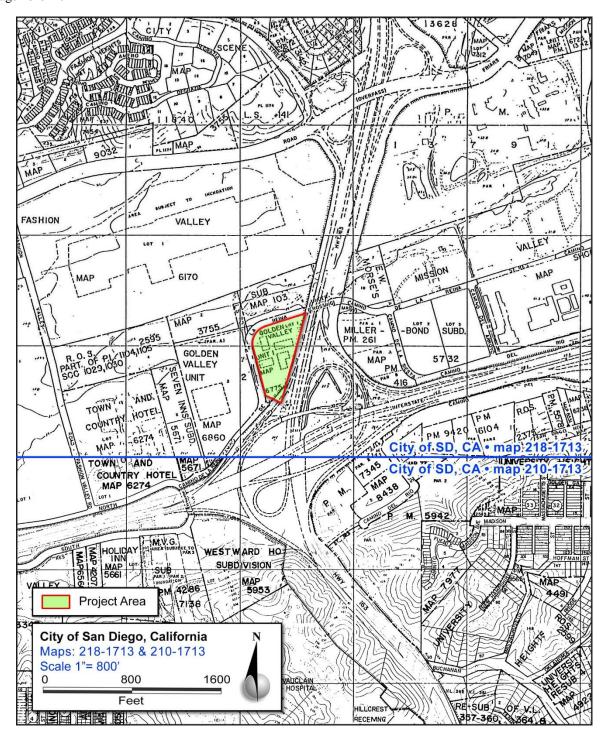


Figure 3. Project location, shown on the City of San Diego 1":800' map.



Figure 4. Project site, facing north.



Figure 5. Project site, facing southeast.



Figure 6. Project site, facing south.



Figure 7. Project site, facing north.

# Appendix A SCIC Records Search Confirmation



South Coastal Information Center San Diego State University 5500 Campanile Drive San Diego, CA 92182-5320 Office: (619) 594-5682 www.scic.org scic@mail.sdsu.edu

# CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM CLIENT IN-HOUSE RECORDS SEARCH

Company:

ASM

Company Representative: BREANA CAMPBELL

Date:

2/19/2015

**Project Identification:** 

123 CAMINO DE LA REINA

Search Radius:

1/4 mile

**Historical Resources:** 

SELF

Trinomial and Primary site maps have been reviewed. All sites within the project boundaries and the specified radius of the project area have been plotted. Copies of the site record forms have been included for all recorded sites.

**Previous Survey Report Boundaries:** 

SELF

Project boundary maps have been reviewed. National Archaeological Database (NADB) citations for reports within the project boundaries and within the specified radius of the project area have been included.

**Historic Addresses:** 

SELF

A map and database of historic properties (formerly Geofinder) has been included.

**Historic Maps:** 

**SELF** 

The historic maps on file at the South Coastal Information Center have been reviewed, and copies have been included.

Copies:

Hours:

1 + PDF fee

# Appendix B NAHC Correspondence



February 19, 2015

Ms. Katy Sanchez
California Native American Heritage Commission
1550 Harbor Blvd. Suite 100
West Sacramento, CA

Via Email: nahc@nahc.ca.gov

Re: Sacred Land Search Request for the 123 Camino de la Reina, City of San Diego, San

Diego County, California

Dear Ms. Sanchez,

ASM Affiliates, Inc. (ASM) is conducting a cultural resource survey for the 123 Camino de la Reina Project (Project), City of San Diego, San Diego County, California. The Project is located on the La Jolla USGS 7.5' Quad, within the unsectioned Pueblo Lands of San Diego (Figure 1). This study is being undertaken in compliance with CEQA.

A records search for the project area was conducted by the South Coastal Information Center. I am writing to inquire if you have registered any cultural resources, traditional cultural properties, or areas of heritage sensitivity within this proposed project area? Our investigation will include direct contact with local tribal entities in a manner that ensures complete confidentiality. We request that you send a listing of the appropriate individuals to make contact with related to this project. Please submit your response to me at our Carlsbad office, listed below. Feel free to call, write, or e-mail if you have any questions. We appreciate any information you can provide on this project.

Sincerely,

Shelby Gunderman Castells, M.A., RPA

Shelly G. Castello

ASM Affiliates, Inc. Senior Archaeologist

Attachments: Figure 1

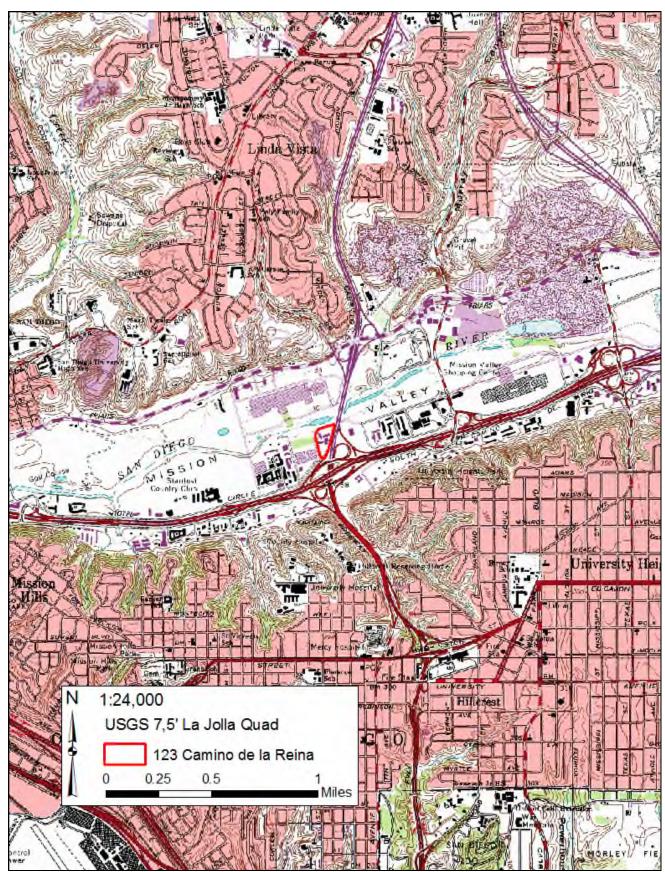


Figure 1. Map of 123 Camino de la Reina Project Area shown on the USGS 7.5' La Jolla Quad Map.

STATE OF CALIFORNIA

Edmund G. Brown, Jr., Governor

#### NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd., ROOM 100 Weat SACRAMENTO, CA 95691 (918) 373-3710 Fax (916) 373-5471



March 3, 2015

Shelby G. Castells ASM Affiliates Inc. 2034 Corte Del Nogal Carlsbad, CA 92011

Sent by Fax: (760) 804-5755

Number of Pages: 3

Re:123 Camino de la Reina, City of San Diego, San Diego County.

Dear Ms. Castells,

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 373-3712.

Sincerely,

Katy Sanchez

Katy Jancher

Associate Government Program Analyst

#### Native American Contact List San Diego County March 3, 2015

Barona Group of the Capitan Grande Clifford LaChappa, Chairperson 1095 Barona Road Diegueno

Lakeside , CA 92040

counciloffice@barona-nsn.gov

(619) 443-6612 (6190 443-0681 Kumeyaay Cultural Historic Committee

Ron Christman

56 Viejas Grade Road

Diegueno/Kumeyaay

Alpine , CA 91901

(619) 445-0385

Ewilaapaayp Tribal Office Robert Pinto Sr., Chairperson

4054 Willows Road

Diegueno/Kumeyaay

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(619) 445-9126 Fax

Sycuan Band of the Kumeyaay Nation

Cody J. Martinez, Chairperson

1 Kwaaypaay Court Diegueno/Kumeyaay

El Cajon , CA 92019 ssilva@sycuan-nsn.gov

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(619) 445-1927 Fax

Viejas Band of Kumeyaay Indians Anthony R. Pico, Chairperson

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Diegueno/Kumeyaay

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(619) 445-3810

(619) 445-5337 Fax

Jamul Indian Village Raymond Hunter, Chairperson

P.O. Box 612

Diegueno/Kumeyaay

Diegueno/Kumeyaay

Diegueno

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Kumeyaay Cultural Repatriation Committee

Steve Banegas, Spokesperson

1095 Barona Road

Lakeside , CA 92040

sbanegas50@gmail.com

(619) 742-5587

(619) 443-0681 Fax

Barona Group of the Capitan Grande

ATTN: Sheilla Alvarez

1095 Barona Road

Lakeside , CA 92040

salvarez@barona-nsn.gov

(619) 443-6612

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting locative Americans with regard to cultural resources for the proposed 123 Camino de la Reina, City of San Diego, San Diego County.

#### Native American Contact List San Diego County March 3, 2015

Viejas Band of Kumeyaay Indians

ATTN: Julie Hagen, Cultural Resources

P.O. Box 908

Diegueno/Kumeyaay

Alpine

, CA 91903

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(619) 445-5337

Ewilaapaayp Tribal Office Will Micklin, Executive Director

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Diegueno/Kumeyaay

Alpine

, CA 91901

wmicklin@leaningrock.net

(619) 445-6315

(619) 445-9126 Fax

Manzanita Band of Mission Indians ATTN: Keith Adkins, EPA Director

P.O. Box 1302

Kumeyaay

, ÇA 91905 Boulevard

(619) 766-4930

(619) 766-4957 Fax

Sycuan Band of the Kumeyaay Nation Lisa Haws, Cultural Resource Manager

Diegueno/Kumeyaay 1 Kwaavpaav Court

El Cajon

, CA 92019

(619) 445-4564

Manzanita Band of the Kumeyaay Nation Nick Elliott, Cultural Resources Coordinator

P.O. Box 1302

Kumeyaay

, CA 91905 Boulevard nickmepa@vahoo.com

(619) 766-4930

(619) 925-0952 Cell

(919) 766-4957 Fax

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2 Kwaaypaay Court

Diegueno/Kumeyaay

, CA 92019 El Cajon kimbactad@gmail.com

(619) 659-1008 Office

(619) 445-0238 Fax

Inter-Tribal Cultural Resource Protection Council

Frank Brown, Coordinator

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frbrown@viejas-nsn.gov

(619) 884-6437

Kumeyaay Cultural Repatriation Committee Bernice Paipa, Vice Spokesperson

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Boulevard

, CA 91905 bernicepaipa@gmail.com

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7060.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting locative Americans with regard to cultural resources for the proposed 123 Camino de la Reina, City of San Diego, San Diego County.

# Professional Environmental Consulting and Training

www.allstate-services.com Email: info@allstate-services.com



Working for a clean environment 2279 Eagle Glen Pkwy, Suite 112-206 Corona, CA 92883 (951) 245-3700 (800) 497-LEAD Fax (951) 245-3753

#### LEAD-BASED PAINT INSPECTION REPORT

(a)

#### 123 CAMINO DE LE REINA SAN DIEGO, CALIFORNIA

PREPARED FOR:
FREY ENVIRONMENTAL
MR. JOHN PAYNE
2817A LAFAYETTE AVENUE
NEWPORT BEACH, CALIFORNIA 92663

PREPARED BY:
JOHN CASTORINI
INSPECTOR/ASSESSOR
CERTIFICATION #I-13642

ORIGINAL REPORT: MARCH 19, 2015 REVISED REPORT: MARCH 30, 2015

# Professional Environmental Consulting and Training

www.allstate-services.com Email: info@allstate-services.com



Working for a clean environment 2279 Eagle Glen Pkwy, Suite 112-206 Corona, CA 92883 (951) 245-3700 (800) 497-LEAD Fax (951) 245-3753

March 30, 2015

Frey Environmental Mr. John Payne 2817A Lafayette Avenue Newport Beach, California 92663

RE: Lead-based paint inspection at 123 Camino De Le Reina, San Diego, California 92104

Dear Mr. John Payne:

In accordance with your request and authorization, Allstate Services conducted a lead-based paint inspection at 123 Camino De Le Reina in San Diego, California on March 16, 2015. John Castorini, a California Certified Lead Inspector/Assessor, conducted the on-site work.

"The results of this inspection indicate that no lead in amounts greater than or equal to 1.0 mg/cm² in paint was found on any building components, using the inspection protocol in Chapter 7 of the *HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1997 Revision)*. Therefore, this dwelling qualifies for the exemption in 24 CFR part 35 and 40 CFR part 745 for target housing being free of lead-based paint, as defined in the rule. However, some painted surfaces may contain levels of lead below 1.0 mg/cm², which could create lead dust or lead-contaminated soil hazards if the paint is turned into dust by abrasion, scraping, or sanding. This report should be kept by the inspector and should also be kept by the owner and all future owners for the life of the dwelling."

If you need any further assistance after reviewing your report, please do not hesitate to contact me. Allstate Services remains available to assist you in anyway possible.

Sincerely,

Steven J. Travers

Director of Operations

Stown Truis

#### **TABLE OF CONTENTS**

<u>Desc</u>	ription Pa	<u>ige</u>
1.0	Testing Methodology	1
2.0	Building Description	2
3.0	Lead-Based Paint Findings	2
4.0	California State Requirements	2
5.0	OSHA Compliance.	2
6.0	Federal Requirements.	3

#### **Appendices**

- A. Summary Inspection NoticeB. Detailed XRF Testing Results
- C. Floor Plans
- D. Inspector/Assessor Certification
- E. DHS Form 8552 Lead Hazard Evaluation Report

#### 1.0 TESTING METHODOLOGY

Lead-based paint testing was conducted using portable x-ray fluorescence (XRF) spectrum analyzer, Model MAP-4, Manufactured by Keymaster of Kennewick, Washington. The MAP-4 is calibrated to measure the K-shell and the L-shell x-ray emissions of lead. The K-shell normally used for paint analysis because it measures lead in all layers of paint films, including the lower layers where higher concentrations of lead are usually found.

Lead-based paint testing was conducted in accordance with *Title 17*, *California Code of Regulations*, *Division 1*, *Chapter 8*, *Accreditation*, *Certification*, and *Work Practice in Lead Related Construction*, *Section 36000* and the United States Department of Housing and Urban Developments *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*, *Chapter 7 Lead-Based Paint Inspections*, as published in June 1995 and revised in 1997.

The purpose of this inspection is to identify surfaces, which contain lead-based paint as per California regulations, the *HUD Guidelines and section 403 of the Toxic Substances Control Act*.

The state of California, HUD and the EPA currently define lead-based paint as a paint or other surface coating which contains lead equal to or greater than 1.0 milligrams of lead per square centimeter of surface area (mg/cm<sup>2</sup>).

XRF readings were taken using the "Unlimited" mode of the MAP-4. "Unlimited" mode measurements have no predetermined testing length, and automatically adjust to account for various types of substrates and materials densities. The precision of the XRF readings is proportional to the square root of the number of x-rays counted by the scanner. The longer the test, the higher the level of precision as compared against the set threshold level of 1.0 mg/cm<sup>2</sup>.

In the "Unlimited" mode, the MAP-4 tests until a K-shell result is indicated as either positive or negative, compared to the threshold level based on the current precision of the test. Correction for paint matrix and substrate effects is performed automatically. The correction function is based on measurements performed by the manufacturer with NIST paint film standards laid over a variety of substrates typically encountered in construction.

Based on the XRF Performance Characteristic Sheet (PCS) jointly released by HUD and EPA (effective June 26, 1996), the inconclusive range of the MAP-4 in the "Unlimited" mode is 0.91 mg/cm<sup>2</sup> to 1.19 mg/cm<sup>2</sup>. Results are classified as positive if they are greater than the upper limit of the inconclusive range. Results are classified as negative if they are less than the lower limit of the inconclusive range. No substrate correction is required for testing using the "Unlimited" mode.

XRF readings were made on testing combinations in all room equivalents in an effort to test typical materials, which are representative of the room equivalent. Testing combinations were tested non-destructively by holding the MAP-4 against the surface being tested. At each XRF sample location the MAP-4 shutter is opened, and one reading was made using the "Unlimited"-testing testing mode. Results of each test were read from the digital display of the instrument console and recorded on the XRF Detailed Testing Data Sheet attached in Appendix B.

To ensure that the XRF equipment was working properly, various quality control tests were performed before, during and after the on-site work. At the beginning of the workday, three start up validation measurements were made in the "Test" mode, using the calibration check standard associated with the particular MAP-4 that was used. This painted standard contains a known quantity of lead and allows the XRF operator to determine whether the instrument is functioning within acceptable tolerance ranges for accuracy and precision, as determined by the manufacturer.

In addition to the three starts up tests, calibration readings were taken on the red 1.02 mg/cm<sup>2</sup> Standard Reference Material (SRM) paint film, developed by the National Institute of Standards and Technology (NIST). Results of each reading, along with computed readings averages were recorded on the XRF Calibration Form, and compared against the calibration tolerance range defined the MAP-4 PCS. This calibration check was also performed after four hours and at the end of the day. The quality control tests taken during testing at the subject property were within the acceptable performance range prescribed by the PCS and by the XRF equipment manufacturer. Documentation of the quality control calibration check is included in Appendix B, following the detailed testing data.

#### 2.0 BUILDING DESCRIPTION

The property tested consists of four two-story office buildings. The building exteriors consist of stucco walls, columns and overhangs, wood and metal door systems, wood window systems, metal fascia, wood corner boards, and metal stairs. The building interiors contain drywall walls, some ceramic tile walls, floors and baseboards, acoustic ceilings, wood and metal door systems, wood window systems, and wood cabinets.

#### 3.0 LEAD-BASED PAINT FINDINGS

No Lead-based paint was found at or above the threshold level of 1.0 mg/cm<sup>2</sup>.

#### 4.0 CALIFORNIA STATE REQUIREMENTS

Allstate Services is required under California regulations (Title 17, CCR, Division 1, Chapter 8) to notify California Department of Health Services that a lead hazard evaluation survey was conducted at the subject property.

Please see Appendix E for DHS Form 8552, Lead Hazard Evaluation Report.

#### 5.0 OSHA COMPLIANCE

OSHA Regulations (Title 8 CCR Section 1532.1 and 29 CFR 1926.62) apply to all construction work where an employee may be occupationally exposed to lead, and therefore may be applicable to renovation or demolition projects involving paints with any concentration of lead.

There are many other building materials, which may contain lead in the average building. When conducting construction activities, which disturb lead in any amount or create an exposure to workers, the employer is required to provide worker protection and conduct exposure assessments. All employers should consult Federal OSHA Regulations at 29 CFR 1926.62 and Cal-OSHA Regulations at Title 8, 1532.1, "Lead in Construction" standards for complete requirements.

#### 6.0 FEDERAL REQUIREMENTS

A copy of this summary must be provided to new lessees (tenants) and purchaser of this property under federal law (24 CFR part 35 and 40 CFR part 745) before they become obligated under a lease or sales contract. The complete report must also be provided to new purchasers and it must be made available to tenants. Landlord (lessors) and sellers are also required to distribute an educational pamphlet approved by the U. S. Environmental Protection Agency and include standard warning language in their lease or sales contracts to ensure that parents have the information they need to protect their children from lead-based paint hazards.

# APPENDIX A SUMMARY INSPECTION NOTICE

# Professional Environmental Consulting and Training

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Working for a clean environment 2279 Eagle Glen Pkwy, Suite 112-206 Corona, CA 92883 (951) 245-3700 (800) 497-LEAD Fax (951) 245-3753

#### **Summary Notice of Lead-Based Paint Inspection**

Address/location of property or structures(s) this summary notice applies to:

123 Camino De Le Reina

San Diego, California

Lead-based paint inspection description:
Dates(s) of inspection: March 16, 2015

Summary of inspection results (check all that apply):
A. \_\_X\_\_ No lead-based paint was found.
B. \_\_\_\_ Lead-based paint was found.
C. \_\_\_\_ A brief summary of the findings of the inspection is provided below (required if lead-based paint is found)

Prepared by: John Castorini Certification Number: #I-13642

# APPENDIX B DETAILED XRF TESTING RESULTS

		_						Lead		Quantities	
		Room	Side					(mg/		For Entire	
Sample	Area	Equivalent	Tested	Component	Substrate	Color	Condition	cm <sup>2</sup> )	Results	Area	Comments
1	Exterior	South Building	Α	Wall	Stucco	Tan	Intact	0.10	Negative		
2		South Building	В	Wall	Stucco	Tan	Intact	0.13	Negative		
3	Exterior	South Building	С	Wall	Stucco	Tan	Intact	0.29	Negative		
4		South Building		Wall	Stucco	Tan	Intact	0.18	Negative		
5		South Building		Door Frame	Wood	Brown	Intact	0.17	Negative		
6		South Building	В	Fascia	Metal	Brown	Intact	0.20	Negative		
7		South Building	В	Window Frame	Wood	Brown	Intact	0.14	Negative		
8		South Building		Window Panel	Wood	Brown	Intact	0.20	Negative		
9		South Building	В	Corner Board	Wood	Brown	Intact	0.13	Negative		
10		South Building	В	Rail	Metal	Brown	Intact	0.20	Negative		
11		Rm. 1-200 South: Lobby	Α	Wall	Drywall	Tan	Intact	0.14	Negative		
12		Rm. 1-200 South: Lobby	В	Wall	Drywall	Tan	Intact	0.07	Negative		
13		Rm. 1-200 South: Lobby	С	Wall	Drywall	Tan	Intact	0.20	Negative		
14		Rm. 1-200 South: Lobby	D	Wall	Drywall	Tan	Intact	0.13	Negative		
15		Rm. 1-200 South: Lobby	В	Door Frame	Wood	Brown	Intact	0.07	Negative		
16		Rm. 1-200 South: Lobby		Ceiling	Acoustic	White	Intact	0.14	Negative		
17		Rm. 1-200 South: Lobby	Α	Wall	Drywall	Tan	Deteriorated	0.03	Negative		
18	Interior	Rm. 2-200 South: Work Room	В	Wall	Drywall	Tan	Deteriorated	0.11	Negative		
19		Rm. 2-200 South: Work Room	С	Wall	Drywall	Tan	Deteriorated	0.14	Negative		
20		Rm. 2-200 South: Work Room		Wall	Drywall	Tan	Deteriorated	0.18	Negative		
21		Rm. 2-200 South: Work Room	Α	Door	Wood	Green	Intact	0.12	Negative		
22		Rm. 2-200 South: Work Room		Ceiling	Acoustic	White	Intact	0.07	Negative		
23		Rm. 2-200 South: Work Room	В	Upper Cabinet	Wood	Tan	Intact	0.11	Negative		
24		Rm. 2-200 South: Work Room	В	Lower Cabinet	Wood	Tan	Intact	0.03	Negative		
25		Rm. 3-200 South: Offices	A	Wall	Drywall	Tan	Intact	0.02	Negative		
26		Rm. 3-200 South: Offices	В	Wall	Drywall	Tan	Intact	0.11	Negative		
27		Rm. 3-200 South: Offices	С	Wall	Drywall	Tan	Intact	0.09	Negative		
28		Rm. 3-200 South: Offices	D	Wall	Drywall	Tan	Intact	0.11	Negative		
29		Rm. 3-200 South: Offices	В	Window Panel	Wood	Tan	Intact	0.11	Negative		
30		Rm. 3-200 South: Offices		Ceiling	Acoustic	White	Intact	0.03	Negative		
31		Rm. 4-200 South: Break Room	Α	Wall	Drywall	Tan	Intact	0.14	Negative		
32		Rm. 4-200 South: Break Room		Wall	Drywall	Tan	Intact	0.20	Negative		
33		Rm. 4-200 South: Break Room		Wall	Drywall	Tan	Intact	0.11	Negative		
34		Rm. 4-200 South: Break Room		Wall	Drywall	Tan	Intact	0.07	Negative		
35		Rm. 4-200 South: Break Room	В	Door	Wood	Grey	Intact	0.03	Negative		
36		Rm. 4-200 South: Break Room		Window Frame	Wood	Tan	Intact	0.11	Negative		
37		Rm. 4-200 South: Break Room	Α	Lower Cabinet	Wood	Grey	Intact	0.02	Negative		
38		Rm. 5-200 East Stairwell	Α	Wall	Drywall	Tan	Intact	0.03	Negative		
39		Rm. 5-200 East Stairwell	В	Wall	Drywall	Tan	Intact	0.11	Negative		
40		Rm. 5-200 East Stairwell	С	Wall	Drywall	Tan	Intact	0.18	Negative		
41		Rm. 5-200 East Stairwell		Wall	Drywall	Tan	Intact	0.17	Negative		
42		Rm. 5-200 East Stairwell	Α	Door	Wood	Grey	Intact	0.20	Negative		
43	Interior	Rm. 5-200 East Stairwell	Α	Door Frame	Wood	Brown	Intact	0.14	Negative		

								Lead		Quantities	
		Room	Side					(mg/		For Entire	
Sample	Area	Equivalent	Tested	Component	Substrate	Color	Condition	cm <sup>2</sup> )	Results	Area	Comments
44	Interior	Rm. 5-200 East Stairwell	D	Stair Rail	Wood	Brown	Intact	0.14	Negative		
45	Interior	Rm. 5-200 East Stairwell	D	Window Frame	Wood	Brown	Intact	0.07	Negative		
46	Interior	Rm. 5-200 East Stairwell	D	Window Panel	Wood	Tan	Intact	0.11	Negative		
47	Interior	Rm. 5-200 East Stairwell		Ceiling	Acoustic	White	Intact	0.03	Negative		
48		Rm. 6-200 South: Men's Restroom	Α	Wall	Drywall	Tan	Intact	0.13	Negative		
49		Rm. 6-200 South: Men's Restroom	В	Wall	Drywall	Tan	Intact	0.11	Negative		
50		Rm. 6-200 South: Men's Restroom	С	Wall	Drywall	Tan	Intact	0.20	Negative		
51		Rm. 6-200 South: Men's Restroom	D	Wall	Drywall	Tan	Intact	0.18	Negative		
52		Rm. 6-200 South: Men's Restroom	Α	Door	Wood	Grey	Intact	0.18	Negative		
53		Rm. 6-200 South: Men's Restroom	Α	Door Frame	Metal	Brown	Intact	0.17	Negative		
54		Rm. 6-200 South: Men's Restroom	В	Wall	Ceramic Tile	Red	Intact	0.20	Negative		
55		Rm. 6-200 South: Men's Restroom		Ceiling	Drywall	White	Intact	0.11	Negative		
56		Rm. 7-200 South: Women's Restroom		Wall	Drywall	White	Intact	0.03	Negative		
57		Rm. 7-200 South: Women's Restroom		Wall	Drywall	White	Intact	0.11	Negative		
58		Rm. 7-200 South: Women's Restroom		Wall	Drywall	White	Intact	0.20	Negative		
59		Rm. 7-200 South: Women's Restroom		Wall	Drywall	White	Intact	0.11	Negative		
60		Rm. 7-200 South: Women's Restroom	Α	Door	Wood	Grey	Intact	0.07	Negative		
61		Rm. 7-200 South: Women's Restroom	Α	Door Frame	Wood	Black	Intact	0.11	Negative		
62		Rm. 7-200 South: Women's Restroom	В	Wall	Ceramic Tile	Red	Intact	0.03	Negative		
63		Rm. 7-200 South: Women's Restroom		Ceiling	Drywall	White	Intact	0.11	Negative		
64		Rm. 8-202 South	В	Wall	Drywall	Yellow	Intact	0.13	Negative		
65		Rm. 8-202 South	С	Wall	Drywall	Yellow	Intact	0.20	Negative		
66		Rm. 8-202 South	D	Wall	Drywall	Yellow	Intact	0.11	Negative		
67		Rm. 8-202 South	В	Door Frame	Wood	Tan	Intact	0.14	Negative		
68		Rm. 8-202 South	В	Window Frame	Wood	Tan	Intact	0.17	Negative		
69		Rm. 8-202 South		Column	Drywall	Tan	Deteriorated	0.11	Negative		
70		Rm. 8-202 South		Ceiling	Acoustic	White	Intact	0.03	Negative		
71		Rm. 8-202 South: Break Room	A	Wall	Drywall	White	Intact	0.03	Negative		
72		Rm. 8-202 South: Break Room	В	Wall	Drywall	White	Intact	0.11	Negative		
73		Rm. 8-202 South: Break Room		Wall	Drywall	Blue	Intact	0.17	Negative		
74		Rm. 8-202 South: Break Room		Wall	Drywall	White	Intact	0.04	Negative		
75		Rm. 8-202 South: Break Room	A	Door	Wood	Brown	Intact	0.03	Negative		
76		Rm. 8-202 South: Break Room	Α	Door Frame	Wood	Black	Intact	0.11	Negative		
77 78		Rm. 8-202 South: Break Room		Ceiling	Acoustic	White	Intact	0.02	Negative		
		Rm. 8-202 South: Break Room	В	Upper Cabinet	Wood	Tan	Intact	0.11	Negative		
79		Rm. 8-202 South: Break Room	В	Lower Cabinet	Wood	Tan	Intact	0.07	Negative		
80		Rm. 9-South: Training	A	Wall	Drywall	Tan	Intact	0.03	Negative		
81		Rm. 9-South: Training	B C	Wall	Drywall	Tan	Intact	0.11	Negative		
82		Rm. 9-South: Training		Wall	Drywall	Tan	Intact	0.17	Negative		
83		Rm. 9-South: Training		Wall	Drywall	Tan	Intact	0.20	Negative		
84		Rm. 9-South: Training	С	Door Frame	Wood	Brown	Intact	0.18	Negative		
85		Rm. 9-South: Training	C	Door Frame	Metal	Black	Intact	0.11	Negative		
86 87		Rm. 9-South: Training Rm. 9-South: Training	A	Window Frame Window Panel	Wood Wood	Tan Tan	Intact Intact	0.07	Negative Negative		

								Lead		Quantities	
		Room	Side					(mg/		For Entire	
Sample	Area	Equivalent	Tested	Component	Substrate	Color	Condition	cm²)	Results	Area	Comments
88	Interior	Rm. 9-South: Training		Ceiling	Acoustic	White	Intact	0.13	Negative		
89	Interior	Rm. 10-100 South: Offices	Α	Wall	Drywall	Tan	Intact	0.04	Negative		
90	Interior	Rm. 10-100 South: Offices		Wall	Drywall	Tan	Intact	0.20	Negative		
91	Interior	Rm. 10-100 South: Offices	С	Wall	Drywall	Tan	Intact	0.14	Negative		
92	Interior	Rm. 10-100 South: Offices	D	Wall	Drywall	Tan	Intact	0.18	Negative		
93	Interior	Rm. 10-100 South: Offices	В	Door	Wood	Brown	Intact	0.17	Negative		
94	Interior	Rm. 10-100 South: Offices	В	Door Frame	Metal	Black	Intact	0.20	Negative		
95	Interior	Rm. 10-100 South: Offices		Ceiling	Acoustic	White	Intact	0.11	Negative		
96	Interior	Rm. 11-100 South: Men's Restroom	Α	Wall	Drywall	Tan	Intact	0.20	Negative		
97	Interior	Rm. 11-100 South: Men's Restroom	В	Wall	Drywall	Tan	Intact	0.11	Negative		
98	Interior	Rm. 11-100 South: Men's Restroom	С	Wall	Drywall	Tan	Intact	0.13	Negative		
99	Interior	Rm. 11-100 South: Men's Restroom	D	Wall	Drywall	Tan	Intact	0.40	Negative		
100	Interior	Rm. 11-100 South: Men's Restroom	С	Baseboard	Ceramic Tile	White	Intact	0.04	Negative		
101	Interior	Rm. 11-100 South: Men's Restroom	С	Door	Wood	Brown	Intact	0.11	Negative		
102	Interior	Rm. 11-100 South: Men's Restroom	С	Door Frame	Metal	Black	Intact	0.13	Negative		
103	Interior	Rm. 11-100 South: Men's Restroom	D	Wall	Ceramic Tile	White	Intact	0.02	Negative		
104	Interior	Rm. 11-100 South: Men's Restroom		Ceiling	Drywall	Tan	Intact	0.17	Negative		
105	Interior	Rm. 11-100 South: Men's Restroom	В	Lower Cabinet	Wood	White	Intact	0.11	Negative		
106	Interior	Rm. 11-100 South: Men's Restroom		Floor	Ceramic Tile	White	Intact	0.03	Negative		
107	Interior	Rm. 12-100 South: Break Room	Α	Wall	Drywall	Brown	Intact	0.13	Negative		
108			В	Wall	Drywall	Brown	Intact	0.20	Negative		
109	Interior	Rm. 12-100 South: Break Room	С	Wall	Drywall	Brown	Intact	0.11	Negative		
110	Interior	Rm. 12-100 South: Break Room	D	Wall	Drywall	Brown	Intact	0.18	Negative		
111	Interior	Rm. 12-100 South: Break Room	В	Door	Wood	Brown	Intact	0.20	Negative		
112	Interior	Rm. 12-100 South: Break Room	В	Door Frame	Metal	Black	Intact	0.11	Negative		
113	Interior	Rm. 12-100 South: Break Room		Ceiling	Acoustic	White	Intact	0.07	Negative		
114	Interior	Rm. 12-100 South: Break Room	D	Upper Cabinet	Wood	Brown	Intact	0.11	Negative		
115	Interior	Rm. 12-100 South: Break Room	D	Lower Cabinet	Wood	Brown	Intact	0.03	Negative		
116	Exterior	West Building	Α	Wall	Stucco	Tan	Intact	0.14	Negative		
117	Exterior	West Building	В	Wall	Stucco	Tan	Intact	0.14	Negative		
118	Exterior	West Building	С	Wall	Stucco	Tan	Intact	0.29	Negative		
119	Exterior	West Building	D	Wall	Stucco	Tan	Intact	0.18	Negative		
120	Exterior	West Building	Α	Door Frame	Wood	Brown	Intact	0.03	Negative		
121		West Building	D	Corner Board	Wood	Brown	Intact	0.11	Negative		
122		West Building	Α	Window Frame	Wood	Brown	Intact	0.17	Negative		
123		West Building		Window Panel	Wood	Brown	Intact	0.20	Negative		
124		West Building	A	Column	Stucco	Tan	Intact	0.11	Negative		
125		Rm. 1-100 West: Lobby	A	Wall	Drywall	White	Intact	0.03	Negative		
126		Rm. 1-100 West: Lobby		Wall	Drywall	White	Intact	0.11	Negative		
127		Rm. 1-100 West: Lobby		Wall	Drywall	White	Intact	0.14	Negative		
128		Rm. 1-100 West: Lobby		Wall	Drywall	White	Intact	0.20	Negative		
129		Rm. 1-100 West: Lobby	D	Door	Wood	White	Intact	0.03	Negative		
130		Rm. 1-100 West: Lobby	A	Door Frame	Wood	White	Intact	0.11	Negative		
131		Rm. 1-100 West: Lobby	A	Window Frame	Wood	White	Intact	0.07	Negative		

								Lead		Quantities	
		Room	Side					(mg/		For Entire	
Sample	Area	Equivalent	Tested	Component	Substrate	Color	Condition	cm <sup>2</sup> )	Results	Area	Comments
132	Interior	Rm. 1-100 West: Lobby	Α	Window Panel	Wood	White	Intact	0.11	Negative		
133	Interior	Rm. 1-100 West: Lobby		Ceiling	Acoustic	White	Intact	0.03	Negative		
134	Interior	Rm. 1-100 West: Lobby	D	Lower Cabinet	Wood	Brown	Intact	0.11	Negative		
135	Interior	Rm. 2-West Break Room	А	Wall	Drywall	White	Intact	0.14	Negative		
136	Interior	Rm. 2-West Break Room	В	Wall	Drywall	White	Intact	0.20	Negative		
137	Interior	Rm. 2-West Break Room	С	Wall	Drywall	White	Intact	0.14	Negative		
138	Interior	Rm. 2-West Break Room	D	Wall	Drywall	White	Intact	0.20	Negative		
139	Interior	Rm. 2-West Break Room	С	Door	Wood	Tan	Intact	0.14	Negative		
140		Rm. 2-West Break Room	С	Door Frame	Metal	Black	Intact	0.20	Negative		
141		Rm. 2-West Break Room	Α	Window Frame	Wood	White	Intact	0.13	Negative		
142	Interior	Rm. 2-West Break Room		Window Panel	Wood	White	Intact	0.27	Negative		
143	Interior	Rm. 2-West Break Room		Ceiling	Acoustic	White	Intact	0.13	Negative		
144		Rm. 2-West Break Room	В	Lower Cabinet	Wood	Brown	Intact	0.18	Negative		
145		Rm. 3-100 West: Men's Restroom	A	Wall	Drywall	Tan	Intact	0.14	Negative		
146		Rm. 3-100 West: Men's Restroom		Wall	Drywall	Tan	Intact	0.20	Negative		
147		Rm. 3-100 West: Men's Restroom	С	Wall	Drywall	Tan	Intact	0.11	Negative		
148		Rm. 3-100 West: Men's Restroom	D	Wall	Drywall	Tan	Intact	0.11	Negative		
149		Rm. 3-100 West: Men's Restroom	В	Door	Wood	Tan	Intact	0.03	Negative		
150		Rm. 3-100 West: Men's Restroom	В	Door Frame	Metal	Black	Intact	0.20	Negative		
151		Rm. 3-100 West: Men's Restroom		Ceiling	Drywall	Tan	Intact	0.11	Negative		
152	Interior			Wall	Drywall	Blue	Intact	0.01	Negative		
153		Rm. 4-100 West: Restroom	В	Wall	Drywall	Blue	Intact	0.28	Negative		
154		Rm. 4-100 West: Restroom	С	Wall	Drywall	Blue	Intact	0.29	Negative		
155	Interior	Rm. 4-100 West: Restroom		Wall	Drywall	Blue	Intact	0.17	Negative		
156	Interior	Rm. 4-100 West: Restroom	Α	Door	Wood	Grey	Intact	0.03	Negative		
157		Rm. 4-100 West: Restroom	A	Door Frame	Metal	Grey	Intact	0.20	Negative		
158		Rm. 4-100 West: Restroom	С	Wall	Ceramic Tile	Brown	Intact	0.11	Negative		
159		Rm. 4-100 West: Restroom		Ceiling	Drywall	Black	Intact	0.14	Negative		
160		Rm. 4-100 West: Restroom	С	Closet Door	Wood	Tan	Intact	0.20	Negative		
161		Rm. 4-100 West: Restroom		Floor	Ceramic Tile	Brown	Intact	0.13	Negative		
162		Rm. 5-100 West: Copy Room	A	Wall	Drywall	White	Intact	0.13	Negative		
163		Rm. 5-100 West: Copy Room	В	Wall	Drywall	White	Intact	0.20	Negative		
164		Rm. 5-100 West: Copy Room	С	Wall	Drywall	White	Intact	0.18	Negative		
165		Rm. 5-100 West: Copy Room		Wall	Drywall	White	Intact	0.29	Negative		
166		Rm. 5-100 West: Copy Room		Ceiling	Acoustic	White	Intact	0.03	Negative		
167		Rm. 5-100 West: Copy Room		Upper Cabinet	Wood	Brown	Intact	0.11	Negative		
168		Rm. 5-100 West: Copy Room	С	Lower Cabinet	Wood	Brown	Intact	0.05	Negative		
169		Rm. 6-100 West Office: Escrow	A	Wall	Drywall	White	Intact	0.03	Negative		
170		Rm. 6-100 West Office: Escrow		Wall	Drywall	White	Intact	0.11	Negative		
171		Rm. 6-100 West Office: Escrow		Wall	Drywall	White	Intact	0.17	Negative		
172		Rm. 6-100 West Office: Escrow	D	Wall	Drywall	White	Intact	0.19	Negative		
173		Rm. 6-100 West Office: Escrow	С	Door Frame	Wood	Brown	Intact	0.03	Negative		
174		Rm. 6-100 West Office: Escrow		Ceiling	Acoustic	White	Intact	0.12	Negative		
175	Interior	Rm. 7-200 West: Office Space	Α	Wall	Drywall	White	Intact	0.20	Negative		

								Lead		Quantities	
		Room	Side					(mg/		For Entire	
Sample	Area	Equivalent	Tested	Component	Substrate	Color	Condition	cm²)	Results	Area	Comments
176	Interior	Rm. 7-200 West: Office Space	В	Wall	Drywall	White	Intact	0.17	Negative		
177	Interior	Rm. 7-200 West: Office Space	С	Wall	Drywall	White	Intact	0.23	Negative		
178		Rm. 7-200 West: Office Space	D	Wall	Drywall	White	Intact	0.11	Negative		
179	Interior	Rm. 7-200 West: Office Space	D	Door	Metal	Black	Intact	0.08	Negative		
180	Interior	Rm. 7-200 West: Office Space	D	Door Frame	Metal	Black	Intact	0.20	Negative		
181		Rm. 7-200 West: Office Space	D	Window Frame	Wood	White	Intact	0.11	Negative		
182		Rm. 7-200 West: Office Space	D	Window Panel	Wood	White	Intact	0.17	Negative		
183	Interior	Rm. 7-200 West: Office Space		Ceiling	Acoustic	White	Intact	0.29	Negative		
184	Interior	Rm. 8-200 West: Break Room	Α	Wall	Drywall	White	Intact	0.20	Negative		
185	Interior	Rm. 8-200 West: Break Room	В	Wall	Drywall	White	Intact	0.13	Negative		
186		Rm. 8-200 West: Break Room	С	Wall	Drywall	White	Intact	0.17	Negative		
187	Interior	Rm. 8-200 West: Break Room	D	Wall	Drywall	White	Intact	0.23	Negative		
188	Interior	Rm. 8-200 West: Break Room	С	Window Frame	Wood	White	Intact	0.04	Negative		
189	Interior	Rm. 8-200 West: Break Room	С	Window Panel	Wood	White	Intact	0.31	Negative		
190	Interior	Rm. 8-200 West: Break Room		Ceiling	Acoustic	White	Intact	0.28	Negative		
191	Interior	Rm. 8-200 West: Break Room	В	Lower Cabinet	Wood	Brown	Intact	0.17	Negative		
192		Rm. 9-200 West: Women's Restroom	Α	Wall	Drywall	White	Intact	0.23	Negative		
193	Interior	Rm. 9-200 West: Women's Restroom	В	Wall	Drywall	White	Intact	0.17	Negative		
194	Interior	Rm. 9-200 West: Women's Restroom	С	Wall	Ceramic Tile	White	Intact	2.20	Positive	100 Ft <sup>2</sup>	Not a Painted Surface
195	Interior	Rm. 9-200 West: Women's Restroom	D	Wall	Drywall	White	Intact	0.18	Negative		
196	Interior	Rm. 9-200 West: Women's Restroom	С	Wall	Ceramic Tile	White	Intact	10.53	Positive	500 Ft <sup>2</sup>	Not a Painted Surface
197	Interior	Rm. 9-200 West: Women's Restroom		Ceiling	Drywall	White	Intact	0.20	Negative		
198	Interior	Rm. 10-200 West: Men's Restroom	Α	Wall	Ceramic Tile	White	Intact	10.13	Positive	200 Ft <sup>2</sup>	Not a Painted Surface
199		Rm. 10-200 West: Men's Restroom		Wall	Ceramic Tile	White	Intact	5.81	Positive	100 Ft <sup>2</sup>	Not a Painted Surface
200	Interior	Rm. 10-200 West: Men's Restroom	С	Wall	Ceramic Tile	White	Intact	7.94	Positive	200 Ft <sup>2</sup>	Not a Painted Surface
201	Interior	Rm. 10-200 West: Men's Restroom	D	Wall	Ceramic Tile	White	Intact	8.14	Positive	100 Ft <sup>2</sup>	Not a Painted Surface
202	Interior	Rm. 10-200 West: Men's Restroom	С	Door	Wood	Blue	Intact	0.20	Negative		
203	Interior	Rm. 10-200 West: Men's Restroom	С	Door Frame	Wood	White	Intact	0.17	Negative		
204	Interior	Rm. 10-200 West: Men's Restroom		Ceiling	Drywall	White	Intact	0.08	Negative		
205		Rm. 11-200 West Stairwell	Α	Wall	Drywall	White	Intact	0.20	Negative		
206	Interior	Rm. 11-200 West Stairwell	В	Wall	Drywall	White	Intact	0.13	Negative		
207	Interior	Rm. 11-200 West Stairwell	С	Wall	Drywall	White	Intact	0.20	Negative		
208	Interior	Rm. 11-200 West Stairwell	D	Wall	Drywall	White	Intact	0.11	Negative		
209	Interior	Rm. 11-200 West Stairwell	В	Door Frame	Wood	White	Intact	0.20	Negative		
210	Interior	Rm. 11-200 West Stairwell	В	Window Frame	Wood	White	Intact	0.13	Negative		
211	Interior	Rm. 11-200 West Stairwell	В	Window Panel	Wood	White	Intact	0.20	Negative		
212		Rm. 11-200 West Stairwell		Ceiling	Drywall	White	Intact	0.19	Negative		
213		North Building	Α	Wall	Stucco	Tan	Intact	0.03	Negative		
214		North Building		Wall	Stucco	Tan	Intact	0.20	Negative		
215		North Building		Wall	Stucco	Tan	Intact	0.17	Negative		
216		North Building	D	Wall	Stucco	Tan	Intact	0.18	Negative		
217		North Building	D	Door Frame	Wood	Brown	Intact	0.20	Negative		
218		North Building	A	Fascia	Metal	Brown	Intact	0.11	Negative		
219		North Building		Window Frame	Wood	Brown	Intact	0.03	Negative		

								Lead		Quantities	
		Room	Side					(mg/		For Entire	
Sample	Area	Equivalent	Tested	Component	Substrate	Color	Condition	cm <sup>2</sup> )	Results	Area	Comments
220	Exterior	North Building	Α	Window Panel	Wood	Brown	Intact	0.20	Negative		
221	Exterior	North Building		Overhang	Stucco	Tan	Intact	0.11	Negative		
222	Interior	Rm. 1-211 North	Α	Wall	Drywall	White	Intact	0.03	Negative		
223	Interior	Rm. 1-211 North	В	Wall	Drywall	White	Intact	0.11	Negative		
224	Interior	Rm. 1-211 North	С	Wall	Drywall	White	Intact	0.14	Negative		
225	Interior	Rm. 1-211 North	D	Wall	Drywall	White	Intact	0.20	Negative		
226	Interior	Rm. 1-211 North	D	Door Frame	Wood	Brown	Intact	0.03	Negative		
227	Interior	Rm. 1-211 North	Α	Window Frame	Wood	Brown	Intact	0.17	Negative		
228	Interior	Rm. 1-211 North	Α	Window Panel	Wood	White	Intact	0.14	Negative		
229	Interior	Rm. 1-211 North		Ceiling	Acoustic	White	Intact	0.20	Negative		
230	Interior	Rm. 2-200 North	Α	Wall	Drywall	Blue	Intact	0.13	Negative		
231	Interior	Rm. 2-200 North	В	Wall	Drywall	Blue	Intact	0.11	Negative		
232	Interior	Rm. 2-200 North	С	Wall	Drywall	Blue	Intact	0.18	Negative		
233	Interior	Rm. 2-200 North	D	Wall	Drywall	Blue	Intact	0.20	Negative		
234	Interior	Rm. 2-200 North	В	Door	Wood	White	Intact	0.13	Negative		
235	Interior	Rm. 2-200 North	В	Door Frame	Metal	White	Intact	0.20	Negative		
236	Interior	Rm. 2-200 North		Column	Drywall	White	Intact	0.14	Negative		
237	Interior	Rm. 2-200 North	D	Window Frame	Wood	Brown	Intact	0.20	Negative		
238	Interior	Rm. 2-200 North	D	Window Panel	Wood	Blue	Intact	0.17	Negative		
239	Interior	Rm. 2-200 North		Ceiling	Acoustic	White	Intact	0.13	Negative		
240	Interior	Rm. 3-200 North: Men's Restroom	Α	Wall	Drywall	Grey	Intact	0.03	Negative		
241	Interior	Rm. 3-200 North: Men's Restroom	В	Wall	Drywall	Grey	Intact	0.11	Negative		
242	Interior	Rm. 3-200 North: Men's Restroom	С	Wall	Drywall	Grey	Intact	0.17	Negative		
243		Rm. 3-200 North: Men's Restroom	D	Wall	Drywall	Grey	Intact	0.20	Negative		
244	Interior	Rm. 3-200 North: Men's Restroom	В	Door	Wood	White	Intact	0.13	Negative		
245	Interior	Rm. 3-200 North: Men's Restroom	В	Door Frame	Metal	Black	Intact	0.20	Negative		
246	Interior	Rm. 3-200 North: Men's Restroom		Ceiling	Drywall	White	Intact	0.11	Negative		
247	Interior	Rm. 4-200 North: Roof Access Room	Α	Wall	Drywall	White	Intact	0.17	Negative		
248	Interior	Rm. 4-200 North: Roof Access Room	В	Wall	Drywall	White	Intact	0.20	Negative		
249	Interior	Rm. 4-200 North: Roof Access Room	С	Wall	Drywall	White	Intact	0.11	Negative		
250	Interior	Rm. 4-200 North: Roof Access Room	D	Wall	Drywall	White	Intact	0.03	Negative		
251	Interior	Rm. 4-200 North: Roof Access Room	В	Door	Wood	White	Intact	0.20	Negative		
252	Interior	Rm. 4-200 North: Roof Access Room	В	Door Frame	Metal	Black	Intact	0.11	Negative		
253	Interior	Rm. 4-200 North: Roof Access Room	D	Ladder	Metal	Tan	Intact	0.05	Negative		
254	Interior	Rm. 4-200 North: Roof Access Room		Ceilina	Drywall	White	Intact	0.11	Negative		
255	Interior	Rm. 5-207 North: Break Room	Α	Wall	Drywall	Green	Intact	0.07	Negative		
256		Rm. 5-207 North: Break Room		Wall	Drywall	Green	Intact	0.20	Negative		
257		Rm. 5-207 North: Break Room	C	Wall	Drywall	Green	Intact	0.11	Negative		
258		Rm. 5-207 North: Break Room	D	Wall	Drywall	Green	Intact	0.03	Negative		
259		Rm. 5-207 North: Break Room	В	Door	Wood	White	Intact	0.20	Negative		
260		Rm. 5-207 North: Break Room		Door Frame	Metal	Black	Intact	0.11	Negative		
261		Rm. 5-207 North: Break Room		Ceiling	Acoustic	White	Intact	0.02	Negative		
262		Rm. 6-210 North	Α	Wall	Drywall	Tan	Intact	0.13	Negative		
263		Rm. 6-210 North	В	Wall	Drywall	Tan	Intact	0.20	Negative		

								Lead		Quantities	
		Room	Side					(mg/		For Entire	
Sample	Area	Equivalent	Tested	Component	Substrate	Color	Condition	cm <sup>2</sup> )	Results	Area	Comments
264		Rm. 6-210 North	С	Wall	Drywall	Tan	Intact	0.14	Negative		
265		Rm. 6-210 North	D	Wall	Drywall	Tan	Intact	0.20	Negative		
266	Interior	Rm. 6-210 North	С	Door	Wood	White	Intact	0.20	Negative		
267	Interior	Rm. 6-210 North	Α	Door Frame	Wood	Brown	Intact	0.17	Negative		
268	Interior	Rm. 6-210 North	Α	Window Frame	Wood	Brown	Intact	0.20	Negative		
269	Interior	Rm. 6-210 North	Α	Window Panel	Wood	Tan	Intact	0.20	Negative		
270	Interior	Rm. 6-210 North		Ceiling	Acoustic	White	Deteriorated	0.14	Negative		
271	Interior	Rm. 6-210 North		Column	Metal	White	Intact	0.20	Negative		
272	Interior	Rm. 7-North: 2nd Floor Stairwell	Α	Wall	Drywall	White	Intact	0.14	Negative		
273	Interior	Rm. 7-North: 2nd Floor Stairwell	В	Wall	Drywall	White	Intact	0.20	Negative		
274	Interior	Rm. 7-North: 2nd Floor Stairwell	С	Wall	Drywall	White	Intact	0.17	Negative		
275	Interior	Rm. 7-North: 2nd Floor Stairwell	D	Wall	Drywall	White	Intact	0.20	Negative		
276	Interior	Rm. 7-North: 2nd Floor Stairwell	Α	Door	Wood	White	Intact	0.13	Negative		
277	Interior	Rm. 7-North: 2nd Floor Stairwell	Α	Door Frame	Metal	Black	Intact	0.20	Negative		
278	Interior	Rm. 7-North: 2nd Floor Stairwell	С	Window Frame	Wood	Brown	Intact	0.19	Negative		
279	Interior	Rm. 7-North: 2nd Floor Stairwell	С	Window Panel	Wood	Brown	Intact	0.20	Negative		
280	Interior	Rm. 7-North: 2nd Floor Stairwell		Ceiling	Acoustic	White	Intact	0.14	Negative		
281	Interior	Rm. 8 North: Library	Α	Wall	Drywall	Tan	Intact	0.17	Negative		
282	Interior	Rm. 8 North: Library	В	Wall	Drywall	Blue	Intact	0.20	Negative		
283	Interior	Rm. 8 North: Library	С	Wall	Drywall	Tan	Intact	0.11	Negative		
284	Interior	Rm. 8 North: Library	D	Wall	Drywall	Tan	Intact	0.14	Negative		
285	Interior	Rm. 8 North: Library	С	Door	Wood	White	Intact	0.20	Negative		
286	Interior	Rm. 8 North: Library	С	Door Frame	Metal	Black	Intact	0.11	Negative		
287		Rm. 8 North: Library	D	Window Frame	Wood	Tan	Intact	0.03	Negative		
288	Interior	Rm. 8 North: Library	D	Window Panel	Wood	Tan	Intact	0.18	Negative		
289	Interior	Rm. 8 North: Library		Ceiling	Acoustic	White	Intact	0.11	Negative		
290		Rm. 9 North: 1st Floor Men's Restroom	Α	Wall	Drywall	Tan	Intact	0.20	Negative		
291	Interior	Rm. 9 North: 1st Floor Men's Restroom	В	Wall	Drywall	Tan	Intact	0.14	Negative		
292	Interior	Rm. 9 North: 1st Floor Men's Restroom	С	Wall	Drywall	Tan	Intact	0.18	Negative		
293	Interior	Rm. 9 North: 1st Floor Men's Restroom	D	Wall	Drywall	Tan	Intact	0.17	Negative		
294	Interior	Rm. 9 North: 1st Floor Men's Restroom	В	Door	Wood	White	Intact	0.07	Negative		
295	Interior	Rm. 9 North: 1st Floor Men's Restroom		Ceiling	Drywall	Tan	Intact	0.14	Negative		
296	Interior	Rm. 10 North: 1st Floor Women's Restroor	Α	Wall	Drywall	Tan	Intact	0.14	Negative		
297	Interior	Rm. 10 North: 1st Floor Women's Restroor	В	Wall	Drywall	Tan	Intact	0.20	Negative		
298	Interior	Rm. 10 North: 1st Floor Women's Restroor	С	Wall	Drywall	Tan	Intact	0.13	Negative		
299	Interior	Rm. 10 North: 1st Floor Women's Restroor	D	Wall	Drywall	Tan	Intact	0.20	Negative		
300	Interior	Rm. 10 North: 1st Floor Women's Restrool	В	Door	Wood	White	Intact	0.17	Negative		
301	Interior	Rm. 10 North: 1st Floor Women's Restrool	В	Door Frame	Metal	Black	Intact	0.20	Negative		
302	Interior	Rm. 10 North: 1st Floor Women's Restroor		Ceiling	Drywall	Tan	Intact	0.19	Negative		
303	Exterior	East Building	Α	Wall	Stucco	Tan	Intact	0.14	Negative		
304	Exterior	East Building		Wall	Stucco	Tan	Intact	0.20	Negative		
305		East Building	С	Wall	Stucco	Tan	Intact	0.17	Negative		
306		East Building		Wall	Stucco	Tan	Intact	0.23	Negative		
307		East Building	Α	Door Frame	Wood	Brown	Intact	0.18	Negative		

								Lead		Quantities	
		Room	Side					(mg/		For Entire	
Sample	Area	Equivalent	Tested	Component	Substrate	Color	Condition	cm²)	Results	Area	Comments
308		East Building	В	Corner Board	Wood	Brown	Intact	0.20	Negative		
309	Exterior	East Building	В	Window Frame	Wood	Brown	Intact	0.17	Negative		
310	Exterior	East Building	В	Window Panel	Wood	Brown	Intact	0.20	Negative		
311	Exterior	East Building	В	Overhang	Stucco	Tan	Intact	0.13	Negative		
312	Exterior	East Building	С	Stair Rail	Metal	White	Intact	0.17	Negative		
313	Exterior	East Building	С	Riser	Metal	Tan	Intact	0.20	Negative		
314		East Building	С	Tread	Metal	Tan	Intact	0.13	Negative		
315	Exterior	East Building	В	Column	Concrete	Tan	Intact	0.14	Negative		
316		East Building	В	Fascia	Metal	Brown	Intact	0.20	Negative		
317	Interior	Rm. 1-East: 1st Floor Lobby	Α	Wall	Drywall	White	Intact	0.22	Negative		
318		Rm. 1-East: 1st Floor Lobby	В	Wall	Drywall	White	Intact	0.17	Negative		
319		Rm. 1-East: 1st Floor Lobby		Wall	Drywall	White	Intact	0.23	Negative		
320	Interior	Rm. 1-East: 1st Floor Lobby	D	Wall	Drywall	White	Intact	0.14	Negative		
321	Interior	Rm. 1-East: 1st Floor Lobby	D	Door	Wood	Brown	Intact	0.14	Negative		
322	Interior	Rm. 1-East: 1st Floor Lobby	С	Door Frame	Metal	Brown	Intact	0.20	Negative		
323	Interior	Rm. 1-East: 1st Floor Lobby		Ceiling	Acoustic	White	Intact	0.13	Negative		
324	Interior	Rm. 2-307 East: Break Room	Α	Wall	Drywall	White	Intact	0.18	Negative		
325	Interior	Rm. 2-307 East: Break Room	В	Wall	Drywall	White	Intact	0.20	Negative		
326	Interior	Rm. 2-307 East: Break Room	С	Wall	Drywall	White	Intact	0.11	Negative		
327	Interior	Rm. 2-307 East: Break Room	D	Wall	Drywall	White	Intact	0.14	Negative		
328	Interior	Rm. 2-307 East: Break Room	С	Door	Wood	Black	Intact	0.19	Negative		
329	Interior	Rm. 2-307 East: Break Room	С	Door Frame	Metal	Black	Intact	0.20	Negative		
330	Interior	Rm. 2-307 East: Break Room	Α	Window Frame	Wood	Brown	Intact	0.17	Negative		
331	Interior	Rm. 2-307 East: Break Room	Α	Window Panel	Wood	White	Intact	0.20	Negative		
332	Interior	Rm. 2-307 East: Break Room		Ceiling	Acoustic	White	Intact	0.13	Negative		
333	Interior	Rm. 3-East: 1st Floor Men's Restroom	Α	Wall	Drywall	White	Intact	0.23	Negative		
334	Interior	Rm. 3-East: 1st Floor Men's Restroom	В	Wall	Drywall	White	Intact	0.17	Negative		
335	Interior	Rm. 3-East: 1st Floor Men's Restroom	С	Wall	Ceramic Tile	White	Intact	13.74	Positive	100 Ft <sup>2</sup>	Not a Painted Surface
336	Interior	Rm. 3-East: 1st Floor Men's Restroom	D	Wall	Drywall	White	Intact	0.29	Negative		
337	Interior	Rm. 3-East: 1st Floor Men's Restroom	Α	Baseboard	Ceramic Tile	White	Intact	10.13	Positive	30 LF	Not a Painted Surface
338	Interior	Rm. 3-East: 1st Floor Men's Restroom	D	Door	Wood	Black	Intact	0.18	Negative		
339	Interior	Rm. 3-East: 1st Floor Men's Restroom	D	Door Frame	Metal	Black	Intact	0.29	Negative		
340	Interior	Rm. 3-East: 1st Floor Men's Restroom		Ceiling	Drywall	White	Intact	0.08	Negative		
341	Interior	Rm. 3-East: 1st Floor Men's Restroom		Floor	Ceramic Tile	Brown	Intact	0.14	Negative		
342	Interior	Rm. 4-East: 1st Floor Women's Restroom	Α	Wall	Drywall	White	Intact	0.23	Negative		
343	Interior	Rm. 4-East: 1st Floor Women's Restroom	В	Wall	Ceramic Tile	White	Intact	10.73	Positive	100 Ft <sup>2</sup>	Not a Painted Surface
344	Interior	Rm. 4-East: 1st Floor Women's Restroom	С	Wall	Drywall	White	Intact	0.17	Negative		
345	Interior	Rm. 4-East: 1st Floor Women's Restroom	D	Wall	Drywall	White	Intact	0.18	Negative		
346		Rm. 4-East: 1st Floor Women's Restroom	Α	Baseboard	Ceramic Tile	White	Intact	10.14	Positive	40 LF	Not a Painted Surface
347		Rm. 4-East: 1st Floor Women's Restroom	Α	Door	Wood	Black	Intact	0.14	Negative		
348		Rm. 4-East: 1st Floor Women's Restroom		Door Frame	Metal	Black	Intact	0.20	Negative		
349		Rm. 4-East: 1st Floor Women's Restroom		Ceiling	Drywall	White	Intact	0.14	Negative		
350		Rm. 4-East: 1st Floor Women's Restroom		Floor	Ceramic Tile	Brown	Intact	0.20	Negative		
351		Rm. 5-318 East: Library	Α	Wall	Drywall	White	Intact	0.14	Negative		

123 Camino De La Reina, San Diego, California

								Lead		Quantities	
		Room	Side					(mg/		For Entire	
Sample	Area	Equivalent	Tested	Component	Substrate	Color	Condition	cm <sup>2</sup> )	Results	Area	Comments
352	Interior	Rm. 5-318 East: Library	В	Wall	Drywall	White	Intact	0.28	Negative		
353	Interior	Rm. 5-318 East: Library	С	Wall	Drywall	White	Intact	0.17	Negative		
354	Interior	Rm. 5-318 East: Library	D	Wall	Drywall	White	Intact	0.20	Negative		
355		Rm. 5-318 East: Library	Α	Door	Wood	Black	Intact	0.13	Negative		
356	Interior	Rm. 5-318 East: Library	Α	Door Frame	Metal	Black	Intact	0.20	Negative		
357	Interior	Rm. 5-318 East: Library	С	Window Frame	Wood	Brown	Intact	0.14	Negative		
358		Rm. 5-318 East: Library	С	Window Panel	Wood	White	Intact	0.20	Negative		
359		Rm. 5-318 East: Library		Ceiling	Acoustic	White	Intact	0.01	Negative		
360	Interior	Rm. 6-East: 1st Floor Restroom	Α	Wall	Drywall	Purple	Intact	0.13	Negative		
361		Rm. 6-East: 1st Floor Restroom	В	Wall	Drywall	Purple	Intact	0.20	Negative		
362	Interior	Rm. 6-East: 1st Floor Restroom	С	Wall	Drywall	Purple	Intact	0.11	Negative		
363	Interior	Rm. 6-East: 1st Floor Restroom	D	Wall	Drywall	Purple	Intact	0.18	Negative		
364	Interior	Rm. 6-East: 1st Floor Restroom	D	Door	Wood	Black	Intact	0.07	Negative		
365		Rm. 6-East: 1st Floor Restroom	D	Door Frame	Metal	Black	Intact	0.13	Negative		
366	Interior	Rm. 6-East: 1st Floor Restroom		Ceiling	Drywall	White	Intact	0.20	Negative		
367	Interior	Rm. 7-200 East: Lobby	Α	Wall	Drywall	White	Intact	0.13	Negative		
368	Interior	Rm. 7-200 East: Lobby	В	Wall	Drywall	White	Intact	0.20	Negative		
369	Interior	Rm. 7-200 East: Lobby	С	Wall	Drywall	White	Intact	0.13	Negative		
370	Interior	Rm. 7-200 East: Lobby	D	Wall	Drywall	White	Intact	0.14	Negative		
371	Interior	Rm. 7-200 East: Lobby	В	Door Frame	Wood	White	Intact	0.17	Negative		
372	Interior	Rm. 7-200 East: Lobby	В	Window Frame	Wood	White	Intact	0.20	Negative		
373	Interior	Rm. 7-200 East: Lobby	В	Window Panel	Wood	White	Intact	0.14	Negative		
374	Interior	Rm. 7-200 East: Lobby		Ceiling	Acoustic	White	Intact	0.20	Negative		
375	Interior	Rm. 8-East: 2nd Floor Work Room	Α	Wall	Drywall	White	Intact	0.18	Negative		
376	Interior	Rm. 8-East: 2nd Floor Work Room	В	Wall	Drywall	White	Intact	0.20	Negative		
377	Interior	Rm. 8-East: 2nd Floor Work Room	С	Wall	Drywall	White	Intact	0.14	Negative		
378	Interior	Rm. 8-East: 2nd Floor Work Room	D	Wall	Drywall	White	Intact	0.13	Negative		
379	Interior	Rm. 8-East: 2nd Floor Work Room	D	Door	Wood	Blue	Intact	0.13	Negative		
380	Interior	Rm. 8-East: 2nd Floor Work Room	D	Door Frame	Metal	Black	Intact	0.20	Negative		
381	Interior	Rm. 8-East: 2nd Floor Work Room		Ceiling	Acoustic	White	Intact	0.17	Negative		
382	Interior	Rm. 8-East: 2nd Floor Work Room	С	Upper Cabinet	Wood	Black	Intact	0.20	Negative		
383	Interior	Rm. 8-East: 2nd Floor Work Room	С	Lower Cabinet	Wood	Black	Intact	0.13	Negative		
384	Interior	Rm. 9-East: Conference Room	Α	Wall	Drywall	White	Intact	0.20	Negative		
385	Interior	Rm. 9-East: Conference Room	В	Wall	Drywall	Blue	Intact	0.17	Negative		
386	Interior	Rm. 9-East: Conference Room	С	Wall	Drywall	White	Intact	0.20	Negative		
387		Rm. 9-East: Conference Room	D	Wall	Drywall	White	Intact	0.18	Negative		
388		Rm. 9-East: Conference Room		Door	Wood	Blue	Intact	0.23	Negative		
389		Rm. 9-East: Conference Room	A	Door Frame	Metal	Black	Intact	0.11	Negative		
390		Rm. 9-East: Conference Room		Window Frame	Wood	White	Intact	0.11	Negative		
391		Rm. 9-East: Conference Room	C	Window Panel	Wood	White	Intact	0.23	Negative		
392		Rm. 9-East: Conference Room		Ceiling	Acoustic	White	Intact	0.14	Negative		
393		Rm. 10-202 East: Reception		Wall	Drywall	White	Intact	0.20	Negative		
394		Rm. 10-202 East: Reception	В	Wall	Drywall	White	Intact	0.13	Negative		
395		Rm. 10-202 East: Reception	C	Wall	Drywall	White	Intact	0.17	Negative		

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								Lead		Quantities	
		Room	Side					(mg/		For Entire	
Sample	Area	Equivalent	Tested	Component	Substrate	Color	Condition	cm <sup>2</sup> )	Results	Area	Comments
396	Interior	Rm. 10-202 East: Reception	D	Wall	Drywall	White	Intact	0.19	Negative		
397	Interior	Rm. 10-202 East: Reception	С	Door Frame	Wood	White	Intact	0.05	Negative		
398		Rm. 10-202 East: Reception	С	Window Frame	Wood	White	Intact	0.20	Negative		
399		Rm. 10-202 East: Reception	С	Window Panel	Wood	White	Intact	0.13	Negative		
400	Interior	Rm. 10-202 East: Reception		Ceiling	Acoustic	White	Intact	0.17	Negative		
401	Interior	Rm. 11-202 East: Break Room	Α	Wall	Drywall	White	Intact	0.13	Negative		
402	Interior	Rm. 11-202 East: Break Room	В	Wall	Drywall	White	Intact	0.20	Negative		
403	Interior	Rm. 11-202 East: Break Room	С	Wall	Drywall	White	Intact	0.14	Negative		
404		Rm. 11-202 East: Break Room	D	Wall	Drywall	White	Intact	0.17	Negative		
405		Rm. 11-202 East: Break Room	С	Door	Wood	Brown	Intact	0.03	Negative		
406		Rm. 11-202 East: Break Room		Door Frame	Metal	White	Intact	0.14	Negative		
407		Rm. 11-202 East: Break Room		Ceiling	Acoustic	White	Intact	0.20	Negative		
408		Rm. 11-202 East: Break Room	Α	Upper Cabinet	Wood	Brown	Intact	0.13	Negative		
409		Rm. 11-202 East: Break Room		Lower Cabinet	Wood	Brown	Intact	0.19	Negative		
410		Rm. 12-203 East: Men's Restroom	Α	Wall	Ceramic Tile	White	Intact	0.13	Negative		
411		Rm. 12-203 East: Men's Restroom	В	Wall	Ceramic Tile	White	Intact	0.20	Negative		
412		Rm. 12-203 East: Men's Restroom	С	Wall	Ceramic Tile	White	Intact	0.11	Negative		
413	Interior	Rm. 12-203 East: Men's Restroom	D	Wall	Ceramic Tile	White	Intact	0.15	Negative		
414	Interior		В	Door	Wood	White	Intact	0.13	Negative		
415	Interior		В	Door Frame	Metal	White	Intact	0.20	Negative		
416	Interior	Rm. 12-203 East: Men's Restroom		Ceiling	Acoustic	White	Intact	0.20	Negative		
417		Rm. 12-203 East: Men's Restroom		Floor	Ceramic Tile	Brown	Intact	0.14	Negative		
418	Interior	Rm. 13-203 East: Roof Access Room	Α	Wall	Drywall	White	Intact	0.13	Negative		
419	Interior	Rm. 13-203 East: Roof Access Room	В	Wall	Drywall	White	Intact	0.20	Negative		
420	Interior	Rm. 13-203 East: Roof Access Room	С	Wall	Drywall	White	Intact	0.17	Negative		
421	Interior	Rm. 13-203 East: Roof Access Room		Wall	Drywall	White	Intact	0.11	Negative		
422	Interior	Rm. 13-203 East: Roof Access Room	В	Door	Wood	Black	Intact	0.03	Negative		
423	Interior	Rm. 13-203 East: Roof Access Room	В	Door Frame	Metal	Black	Intact	0.11	Negative		
424	Interior	Rm. 13-203 East: Roof Access Room	Α	Ladder	Metal	Grey	Intact	0.02	Negative		
425	Interior	Rm. 14-203 East: Women's Restroom	Α	Wall	Ceramic Tile	White	Intact	0.03	Negative		
426	Interior	Rm. 14-203 East: Women's Restroom		Wall	Ceramic Tile	White	Intact	0.11	Negative		
427	Interior	Rm. 14-203 East: Women's Restroom	С	Wall	Ceramic Tile	White	Intact	0.17	Negative		
428	Interior	Rm. 14-203 East: Women's Restroom	D	Wall	Ceramic Tile	White	Intact	0.08	Negative		
429		Rm. 14-203 East: Women's Restroom	В	Door	Wood	White	Intact	0.09	Negative		
430		Rm. 14-203 East: Women's Restroom	В	Door Frame	Metal	White	Intact	0.20	Negative		
431		Rm. 14-203 East: Women's Restroom		Ceiling	Acoustic	White	Intact	0.13	Negative		
432		Rm. 14-203 East: Women's Restroom		Floor	Ceramic Tile	Brown	Intact	0.14	Negative		
433		Rm. 15-201E East: Office	Α	Wall	Drywall	White	Intact	0.14	Negative		
434		Rm. 15-201E East: Office		Wall	Drywall	White	Intact	0.03	Negative		
435		Rm. 15-201E East: Office		Wall	Drywall	White	Intact	0.20	Negative		
436		Rm. 15-201E East: Office		Wall	Drywall	White	Intact	0.11	Negative		
437		Rm. 15-201E East: Office	D	Door	Wood	Green	Intact	0.13	Negative		
438		Rm. 15-201E East: Office	D	Door Frame	Metal	White	Intact	0.20	Negative		
439	Interior	Rm. 15-201E East: Office	Α	Window Frame	Wood	White	Intact	0.08	Negative		

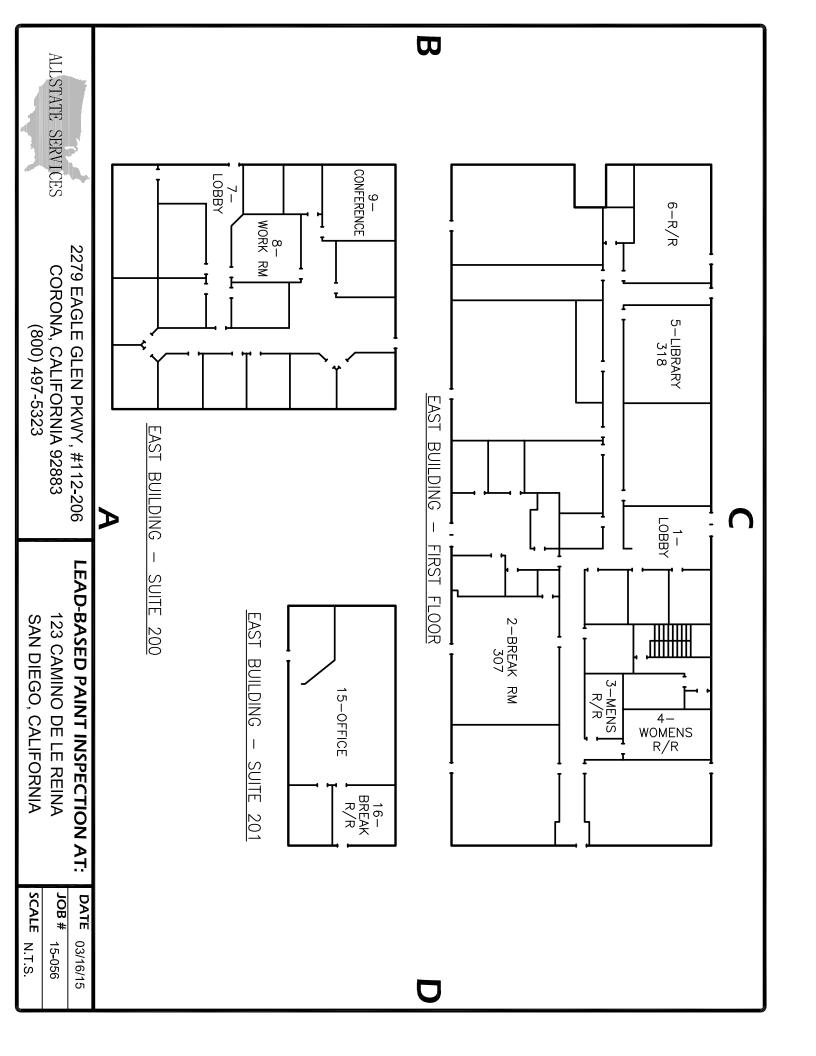
		Room	Side					Lead (mg/		Quantities For Entire	
Sample	Area	Equivalent	Tested	Component	Substrate	Color	Condition	cm²)	Results	Area	Comments
440	Interior	Rm. 15-201E East: Office	Α	Window Panel	Wood	White	Intact	0.11	Negative		
441	Interior	Rm. 15-201E East: Office		Ceiling	Acoustic	White	Intact	0.02	Negative		
442	Interior	Rm. 16-201E East: Break Room	Α	Wall	Drywall	White	Intact	0.13	Negative		
443	Interior	Rm. 16-201E East: Break Room	В	Wall	Drywall	White	Intact	0.20	Negative		
444	Interior	Rm. 16-201E East: Break Room	С	Wall	Drywall	White	Intact	0.12	Negative		
445	Interior	Rm. 16-201E East: Break Room	D	Wall	Drywall	White	Intact	0.18	Negative		
446	Interior	Rm. 16-201E East: Break Room	D	Door	Metal	Green	Intact	0.04	Negative		
447	Interior	Rm. 16-201E East: Break Room	D	Door Frame	Metal	Green	Intact	0.20	Negative		
448	Interior	Rm. 16-201E East: Break Room		Ceiling	Acoustic	White	Intact	0.09	Negative		
449	Interior	Rm. 16-201E East: Break Room	С	Upper Cabinet	Wood	Tan	Intact	0.20	Negative		
450	Interior	Rm. 16-201E East: Break Room	С	Lower Cabinet	Wood	Tan	Intact	0.13	Negative		
451	Exterior	Common Exterior Stairwell	Α	Wall	Stucco	Tan	Intact	0.04	Negative		
452	Exterior	Common Exterior Stairwell	В	Wall	Stucco	Tan	Intact	0.11	Negative		
453	Exterior	Common Exterior Stairwell	С	Wall	Stucco	Tan	Intact	0.18	Negative		
454	Exterior	Common Exterior Stairwell	D	Wall	Stucco	Tan	Intact	0.20	Negative		
455	Exterior	Common Exterior Stairwell	В	Stair Rail	Metal	Brown	Intact	0.03	Negative		
456	Exterior	Common Exterior Stairwell	В	Tread	Metal	Brown	Intact	0.17	Negative		
457	Exterior	Common Exterior Stairwell	В	Riser	Metal	Brown	Intact	0.11	Negative		·
458	Exterior	Common Exterior Stairwell		Column	Concrete	Tan	Intact	0.03	Negative		

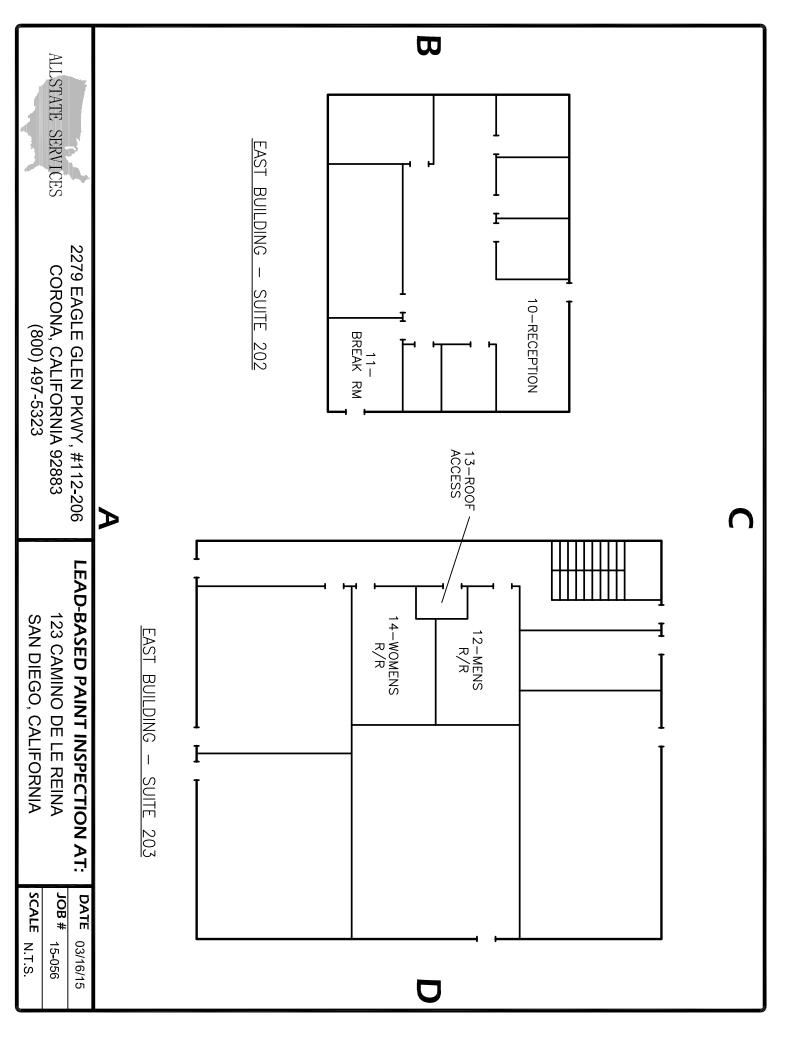
# ALLSTATE SERVICES XRF CALIBRATION FORM

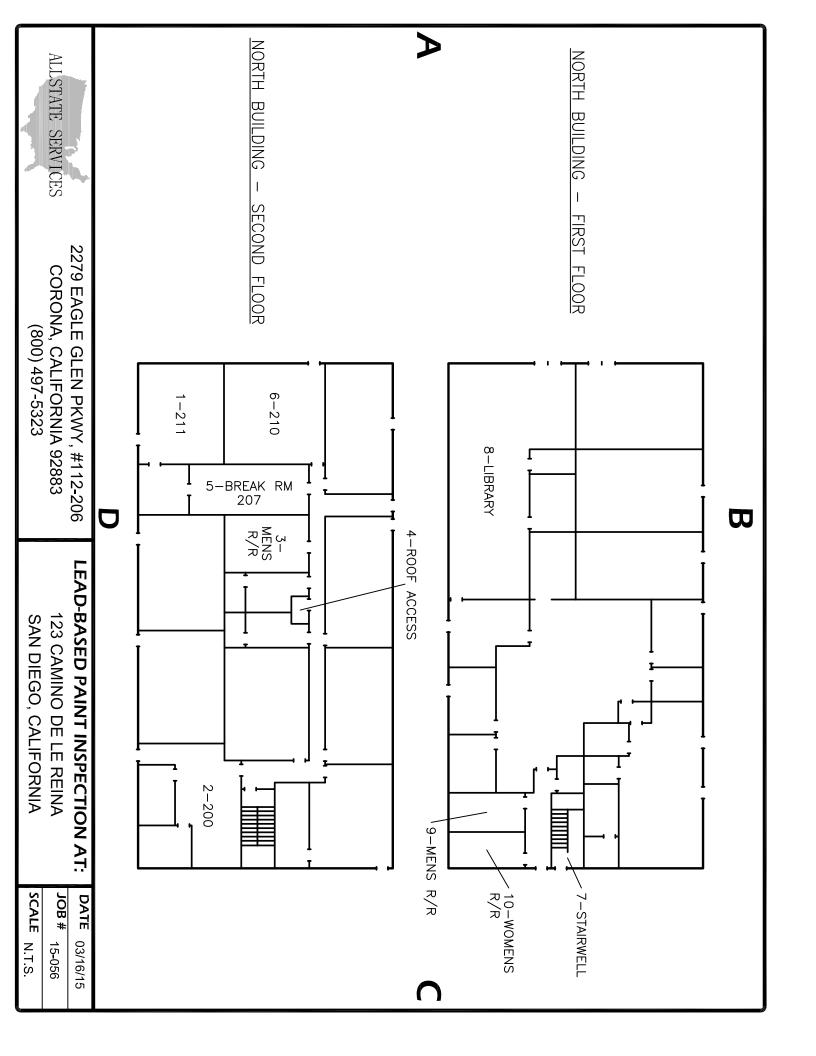
Address/Unit: 123 Camino De Le Reina, San Diego, California									
Device:	KEY MASTER/MAP-4 M41448								
Date:	March 16, 2015								
Inspector:_	John Castorini								
Calibration Check Tolerance Used: 0.6 mg/cm - 1.2 mg/cm (Inclusive)  Use Level III (1.02 mg/cm²) NIST SRM Paint film  First Calibration Check  Time: 8:25 a.m.									
	1 <sup>st</sup> Reading	2 <sup>nd</sup> Reading	3 <sup>rd</sup> Reading	1 <sup>st</sup> Average					
	0.94	1.07	1.03	1.01					
Second Calibration Check  Time: 12:05 p.m.									
	1 <sup>st</sup> Reading	2 <sup>nd</sup> Reading	3 <sup>rd</sup> Reading	2 <sup>nd</sup> Average					
	0.92	1.04 0.93		0.96					
Third Calibration Check (If Needed)  Time:									
	1 <sup>st</sup> Reading	2 <sup>nd</sup> Reading	3 <sup>rd</sup> Reading	3 <sup>rd</sup> Average					

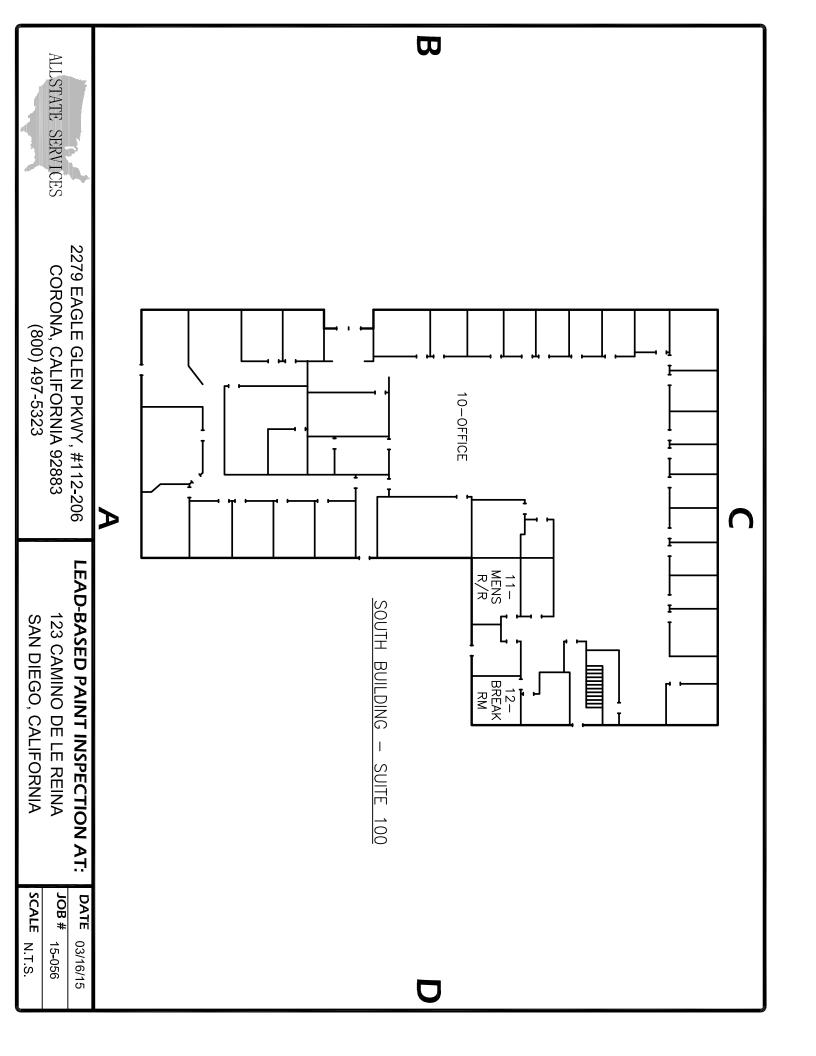
- Use the Test Mode Reading
- Tolerance Values for KEY MASTER/MAP-4: 0.6 mg/cm to 1.2 mg/cm (Inclusive)

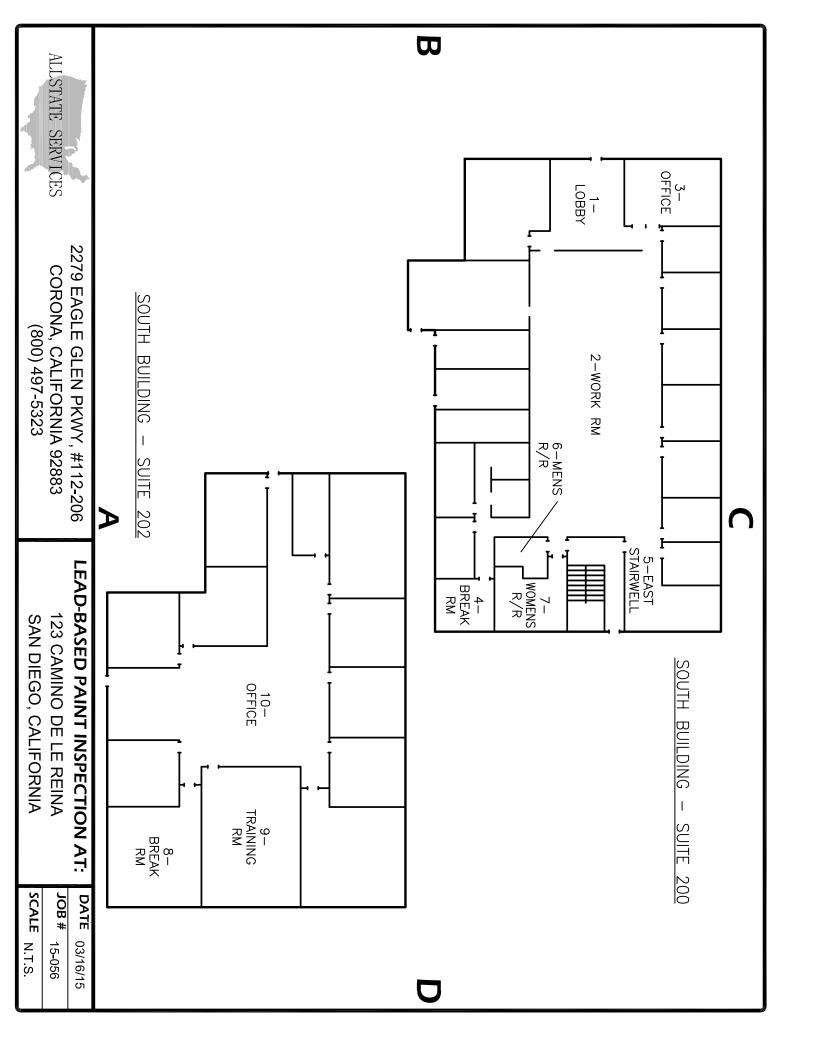
# APPENDIX C FLOOR PLANS

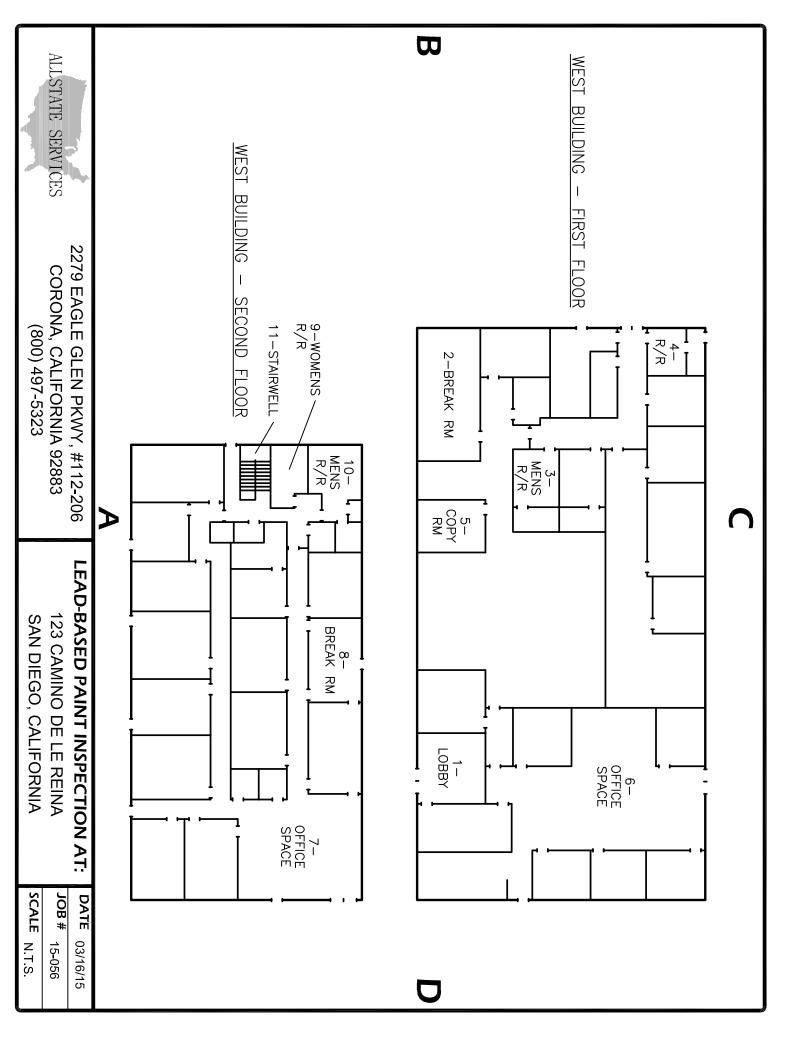












# APPENDIX D INSPECTOR CERTIFICATION



# APPENDIX E DHS FORM 8552 - LEAD HAZARD EVALUATION REPORT

#### **LEAD HAZARD EVALUATION REPORT**

Section 1 — Date of Lead Hazard Evaluation					
Section 2 — Type of Lead Hazard Evaluation (Che	eck one	box only)			
Lead Inspection Risk assessment	Cleara	nce Inspection (	Other (specify)		
Section 3 — Structure Where Lead Hazard Evalua	ation Wa	s Conducted			
Address [number, street, apartment (if applicable)]	Cit	ty	County	Zip Code	
Construction date (year) of structure  Type of structure  Multi-unit building  Single family dwelling		School or daycare Other	Children living in structure?  Yes No Don't Know		
Section 4 — Owner of Structure (if business/agen	ncy, list o	contact person)			
Name			Telephone number		
Address [number, street, apartment (if applicable)]	Ci	ity	State	Zip Code	
Section 5 — Results of Lead Hazard Evaluation (c	check all	I that apply)			
No lead-based paint detected Intact le		d paint detected und Lead-contan	Deteriorated lead-base	ed paint detected	
Section 6 — Individual Conducting Lead Hazard B	Evaluation	on			
Name			Telephone number		
Address [number, street, apartment (if applicable)]	Ci	ity	State	Zip Code	
CDPH certification number		Ure Digitally signed by John Castorini DN: cn=John Castorini, o, ou, email=jcastorini@allstate-services.com, c=US Date: 2015.03.30 12:05:43 -07'00'		Date	
Name and CDPH certification number of any other individua	als conduc	cting sampling or testing	(if applicable)		
Section 7 — Attachments					
A. A foundation diagram or sketch of the structure inclead-based paint;     B. Each testing method, device, and sampling proced.     C. All data collected, including quality control data, la	dure use	d;			
First copy and attachments retained by inspector		Third copy only (no attachments) mailed or faxed to:			
Second copy and attachments retained by owner		California Department of Public Health Childhood Lead Poisoning Prevention Branch Reports 850 Marina Bay Parkway, Building P, Third Floor Richmond, CA 94804-6403 Fax: (510) 620-5656			

# FREY ENVIRONMENTAL, INC.

Environmental Geologists, Engineers, Assessors

2817A Lafayette Avenue Newport Beach, CA 92663 (949) 723-1645 Fax (949) 723-1854

<u>www.freyinc.com</u> Email: freyinc@freinc.com

May 1, 2015 698-15

Mr. Lawrence Howard Trammell Crow Residential 5790 Fleet Street, Suite 140 Carlsbad, CA 92008

#### ASBESTOS SURVEY REPORT 123 CAMINO DE LA REINA SAN DIEGO, CALIFORNIA 92108

#### 1.0 INTRODUCTION

This report presents the results of an asbestos survey conducted at the property referenced above (Site) on March 16, 2015 (Figures 1 & 2).

The asbestos survey was conducted by a Certified Asbestos Consultant (CAC) from FREY Environmental, Inc. (FREY). The purpose of the asbestos survey was to identify potential asbestos containing materials (ACMs) in the Site buildings.

#### **Description of the Site Buildings**

The Site included four two story buildings used as business offices, and three educational facilities (Mueller College, Human International Academy and International House) that included offices, classrooms and a library. The structures are described herein and are shown on Figure 2.

**North Building:** Included a two story structure occupied by Mueller College. Interiors included a large library and several classrooms on the first floor and several offices, classrooms, bathrooms, and a break area on the second floor. The building was constructed of wood with stucco exterior walls. Interior walls were wood-framed with drywall. Ceilings on the first and second floors were constructed with a plenum and a drop ceiling with ceiling tiles. Interior floors included carpet, composite flooring, ceramic floor tile, and vinyl color tile. Roofing materials included cement shingles and asphalt roofing sheets. Roofing mastic was located at penetrations, repairs, and at A/C units.

**East Building:** Included a two story structure occupied by Human International Academy on the first floor, and several businesses and additional class rooms on the second floor. Interiors included several offices, classrooms, bathrooms, and a break area on the first floor, and offices and classrooms on the second floor. The building was constructed as described for the north building.

**South Building:** Included a two story structure occupied by a property management company, an education business, and a real estate company. Interiors included several offices, bathrooms, break room areas and a vacant unit on the first floor, and several offices, classrooms, bathrooms, and a break area on the second floor. The building was constructed as described for the north building.

West Building: Included a two story structure occupied by a real estate company on the first floor and a vacant unit on the second floor that appeared under construction. Interiors included several offices, bathrooms, break room areas and a janitor supply area on the first floor and vacant offices and bathrooms on the second floor. The building was constructed as described for the north building.

Building locations and designations are shown on Figure 2.

### 2.0 OBJECTIVE

The objective of the work summarized in this report was to assess the likelihood that asbestos is present in concentrations greater than one percent in accessible construction materials on the Site structures.

### 3.0 APPROACH AND SCOPE OF SERVICES

The approach used to meet the objective included visual observation of accessible construction materials, the collection and analysis of bulk samples of accessible construction materials that were judged to potentially contain asbestos, evaluation of the data obtained, and preparation of this report.

The scope of services used to meet the objective included:

- An inspection of the Site buildings for suspected asbestos containing materials (ACMs) by a certified asbestos consultant;
- An assessment of the condition of sampled materials and identification of potential health hazards:
- Collection of samples of accessible construction materials that were judged to potentially contain asbestos;
- Laboratory analyses of the bulk samples by a National Voluntary Laboratory Accreditation Program (NVLAP)-approved laboratory using polarized light microscopy (PLM) in general accordance with U.S. Environmental Protection Agency (EPA) Method No. 600/M4-82-020;

- Preparation of an asbestos summary table presenting the descriptions of materials sampled, sample collection locations, estimated area covered by ACMs, and laboratory analytical results;
- Preparation of Site figures depicting the Site and the locations of identified ACMs; and
- Data evaluation and preparation of this report summarizing the results of the survey.

## 4.0 GUIDELINES AND TERMINOLOGY FOR ASBESTOS CHARACTERIZATION

The following section provides information pertaining to regulatory agency definitions of terms used to describe the sampling strategy, laboratory analysis, and survey observations.

# **4.1 Asbestos Sampling Strategy**

This asbestos survey was performed in general accordance with standard procedures recommended by the Environmental Protection Agency (EPA, 1985 and 1987) for the performance of asbestos surveys.

The sampling strategy used to collect the samples in this survey was based on the EPA's publication, "Guidance for Controlling Asbestos-Containing Materials in Buildings" (EPA, 1985) and was based on the 1987 AHERA guidelines set forth in Title 40 of the Code of Federal Regulations (CFR) Part 763 and applicable appendices. These documents call for the sampling of friable materials, which are defined by the EPA as those materials that can be crumbled, pulverized, or reduced to powder by hand pressure when dry (EPA, 1985).

Nonfriable asbestos-containing materials (ACMs) can become friable when disturbed through work practices and handling of the material (EPA, 1987). Such work practices can include grinding, sanding, and handling of the material in an attempt to remove it.

The EPA specifies that ACMs that are classified as friable, or that may become friable, are to be removed prior to demolition activities (EPA, 1990). According to the EPA (1985), nonfriable ACMs represent a minimal hazard to the occupants of a building, as long as the material is in a generally undamaged condition and is used for its intended purpose.

The National Emissions Standards for Hazardous Air Pollutants (NESHAPS) (Title 40 CFR Section 61) defines nonfriable ACMs as nonfriable material containing more than 1 percent asbestos by area or by weight and that can potentially be broken, crumbled, pulverized, or reduced to powder in the course of demolition or renovation activities.

## **4.2 Laboratory Information**

The bulk samples that were collected were transported to Envirocheck, Inc. laboratories with chain-of-custody records used to document their handling. Envirocheck, Inc. is a participant in the NVLAP of the U.S. Department of Commerce National Institute of Standards and Technology (NIST) for bulk asbestos analysis. The bulk samples collected were analyzed by the laboratory, using PLM, for the presence and quantification of asbestos, in general accordance with EPA Method No. 600/M4-82-020. A copy of the laboratory report and a copy of the chain-of-custody records for the samples collected and transferred to the laboratory are presented in Appendix A.

# ACM vs. ACCM

When a material is found to contain asbestos in a concentration of greater than 1 percent, it is defined by the EPA as an ACM (EPA, 1987). Section 25919 of the California Health and Safety Code defines an asbestos containing construction material (ACCM) as one that contains greater than 0.1 percent asbestos (California Health and Safety Code). The California Occupational Safety and Health Administration (Cal-OSHA) requires that worker/employee notification and training be implemented when a material contains greater than 0.1 percent asbestos in an area where workers/employees perform work (Cal-OSHA, 1989).

# 4.3 Asbestos Survey Terminology

For the purposes of discussion, the terms "undamaged," (no damage or very little damage or deterioration) "damaged," (less than 10% evenly distributed damage - abraded, gouged, blistered, water damaged, or crumbling) and "significantly damaged" (10% or greater evenly distributed damage or 25% or greater localized damage) refer to the condition of the construction materials from which the samples were collected at the time the survey was conducted. The terms are applied based on our judgment using the definitions in Title 40 CFR Part 763 (EPA Federal Register 1987, p 41893).

The term "homogeneous area" is used here in general accordance with its definition by the EPA as an area of surfacing material, thermal system insulation material, or other miscellaneous material that is uniform in color and texture.

## **5.0 ASBESTOS SURVEY**

The asbestos survey was conducted at the Site on March 16, 2015, by a certified asbestos consultant from FREY. Bulk samples of accessible construction materials judged by certified personnel to potentially contain asbestos were collected from the Site structure.

A total of 135 bulk samples (plus additional layers) of accessible construction materials were collected from the Site buildings. Descriptions of the materials sampled are summarized in Table 1.

## 5.1 ASBESTOS CONTAINING MATERIALS

The following summary table lists samples of materials that were reported by the laboratory to contain asbestos. The listed samples are grouped by material type. The "locations of material" column refers to materials throughout the building that were observed to be homogeneous with samples of materials reported to contain asbestos. Square footage estimates of asbestos containing materials are also presented.

SAMPLE NUMBER <sup>1</sup>	DESCRIPTION OF MATERIAL SAMPLED	SAMPLE LOCATIONS	ESTIMATED AREA COVERED <sup>2</sup>	PLM <sup>3</sup> RESULTS (% asbestos)
Fashion Va	lley East Building			
E2-1	Floor tile; 1'x1'; white; w/ yellow mastic; undamaged; non-friable	2 <sup>nd</sup> floor roof access room	100 ft <sup>2</sup>	Tile: 2% CH
E3-1,2,3	TSI hardpack elbow insulation; white; fibrous; undamaged; friable	Approx. 20 elbow locations in plenum	20 locations	3% CH <sup>5</sup> 3% AM <sup>5</sup>
Fashion Va	lley South Building			
S8-2	Drywall w/ joint compound; white; Composite Sample; undamaged; non-friable	First floor telephone and equipment room, north east side of Coldwell Banker suite	500 ft <sup>2</sup>	<1% CH
S11-1,2	Floor tile; 1'x1'; Taupe; w/ black & yellow mastic; undamaged; non-friable	First floor break room, north east side of Coldwell Banker Suite	165 ft²	Tile: ND Mastic: 5% CH
Fashion Va	illey West Building			
W5-1,2	Floor tile; 1'x1'; beige; w/ black mastic; undamaged; non-friable	First floor, northwest corner, electrical room and janitor closet	190 ft <sup>2</sup>	Tile: 7% CH Mastic: 4% CH
W11-1	Black floor mastic; undamaged; non-friable	Second floor, west side janitor closet / plenum access room	65 ft <sup>2</sup>	Mastic: 3% CH
W13-1,2,3	TSI hardpack elbow insulation; white; fibrous; undamaged; friable	Approx. 20 elbow locations in plenum	20 locations	17% CH
W14-1	Roof mastic; black; undamaged; non-friable	Roof – east vent seal	10 ft <sup>2</sup>	3% CH
WR1-1,2,3	Stucco wall (exterior); tan/yellow/gray; hard; undamaged; non-friable	1st floor and 2nd floor exterior walls (all exterior sides of Building West)	3,200 ft <sup>2</sup>	0.3% CH
Assumed A	CM – North & South Buildin	ngs		
N/A	TSI harpack elbows	North and south building plenum	If present	Assumed ACM

Table 1 presents descriptions of the materials sampled, sample collection locations, and a summary of laboratory analytical results. Sample locations of reported ACMs and ACCMs are presented in Figure 2. Laboratory reports and chain-of-custody documents are presented in Appendix A.

## **6.0 CONCLUSIONS**

Based on the information obtained during this survey, laboratory analytical results, current regulatory guidelines and law, state-of-the-industry practices, and our professional judgment, the following conclusions have been drawn:

# **ACMs**

# **North Building**

Samples collected from the North Building did not contain detectible amounts of asbestos. Additional TSI hardpack elbows may be found in this building and are assumed to be ACM.

# **East Building**

- 12-inch by 12-inch floor tile located on the second floor in the roof access room of the East Building was reported to contain asbestos in concentrations greater than 1%. Associated flooring mastic was not reported to contain asbestos. This material was judged to be nonfriable and was generally observed to be present in an undamaged to condition at the time the survey was conducted.
- Samples collected from TSI hardpack elbow joints in the East Building attic and roof
  were reported to contain asbestos at concentrations of up to 17% chrysotile. This material
  was judged to be friable and was observed to be present in an undamaged to damaged
  condition at several locations in the East attic and rooftop at the time the survey was
  conducted

## **South Building**

- Floor tile mastic collected from the first floor break room in the South Building was reported to contain asbestos in concentrations greater than 1%. This material was judged to be nonfriable and was generally observed to be present in an undamaged to condition at the time the survey was conducted.
- Additional TSI hardpack elbows may be found in the South Building and are assumed to be ACM.

## **West Building**

• 12-inch by 12-inch floor tile and flooring mastic located on the first floor of the West Building in the janitor closet and electrical room was reported to contain asbestos in concentrations greater than 1%. This material was judged to be nonfriable and was generally observed to be present in an undamaged to condition at the time the survey was conducted.

- Floor tile mastic collected from the second floor attic access room in the West Building was reported to contain asbestos in concentrations greater than 1%. This material was judged to be nonfriable and was generally observed to be present in an undamaged to condition at the time the survey was conducted.
- Roof mastic samples collected from the roof of the West Building at the east vent seal was reported to contain asbestos at a concentration greater than 1% chrysotile. This material was judged to be nonfriable and was generally observed to be present in an undamaged to condition at the time the survey was conducted.
- Samples collected from TSI hardpack elbow joints in the West Building attic were reported to contain asbestos at concentrations of up to 17% chrysotile. This material was judged to be friable and was observed to be present in an undamaged condition at several locations in the West building attic at the time the survey was conducted.

# **ACCMs**

- One of three samples collected from drywall and joint compound located in the utility room of the first floor of the South Building (Coldwell Banker Suite) was reported to contain asbestos at a concentration of less than 1% chrysotile. The remaining samples collected from within this building did not contain asbestos. Additional point counting was not completed due to the limited amount of composite sample remaining after completion of PLM analysis. This material was judged to be non-friable and was generally observed to be present in an undamaged condition at the time the survey was conducted.
- Samples collected from the exterior stucco wall of the West Building were reported to contain asbestos in concentrations greater than 0.1 %, but less than 1%. These materials were judged to be non-friable and were generally observed to be present in an undamaged condition at the time the survey was conducted.

Excluding the aforementioned materials, and inaccessible materials, there is a low likelihood that asbestos is present in concentrations greater than one percent in the remaining accessible construction materials at the Site buildings in surveyed areas.

#### 7.0 RECOMMENDATIONS

Based on the information obtained during this survey, current regulatory guidelines, state-of-the-industry practices, and our professional judgment, the following recommendations are presented for your consideration:

- One of three samples collected from drywall and joint compound at the South Building was reported to contain less than 1% asbestos. Additional sampling and analysis of joint compound at this building should be completed to assess if concentrations of asbestos are present at concentrations below 0.1% (below ACCM levels) which may reduce the amount of abatement required at the Site.
- Prior to renovation or demolition of the Site building(s), NESHAPS, Title 40 Code of Federal Regulations Part 61 (enforced locally by the San Diego Air Pollution Control District, under authority, per Regulation XI, Subpart M Rule 361.145), and other regulations require that both friable and various nonfriable ACMs be removed from the structures at the Site by a licensed abatement contractor registered in the State of California and certified to perform asbestos-related activities.
- Materials reported to contain asbestos (ACMs and ACCMs) should be removed by a qualified asbestos abatement contractor prior to conducting any work that may disturb this material including maintenance activities, building renovation, or demolition.
- If additional materials are discovered during remodeling or demolition of the building(s) and laboratory analysis of samples of those materials was not performed, samples should be collected and analyzed prior to removal or disturbance of the materials.
- Applicable laws and regulations should be followed, including those provisions requiring notification of tenants, employees, maintenance and custodial personnel, and outside contractors who may contact the asbestos-containing materials, of the location of these materials

The above recommendations are intended to provide guidance in implementing procedures which, in our experience, are appropriate within the regulatory environment in California. These recommendations are not intended to constitute legal advice; it is possible that legal counsel familiar with asbestos law would provide recommendations that would differ from those cited above and/or would advise compliance with regulations, guidelines, and laws not cited herein

## 8.0 LIMITATIONS

Estimates of the quantities of construction materials present at the Site are provided for discussion purposes only. No warranty as to the accuracy of the estimates of materials provided is expressed or implied. The estimates provided in this report should not be relied upon or used in the preparation of asbestos abatement specifications.

The judgments, conclusions, and recommendations described in this report pertain to the conditions judged to be present or applicable at the time the work was performed. Future

conditions may differ from those described herein. Use of this report is provided to our client solely for their exclusive use and the use and shall be subject to the terms and conditions in the applicable contract between our company and the client. Any third party use shall also be subject to the terms and conditions governing the work in the contract between our company and the client. Any unauthorized release or misuse of this report shall be without risk or liability to our company.

Certain information contained in this report may have been rightfully provided to our company by third parties or other outside sources. We do not make any warranties or representations, whether expressed or implied, regarding the accuracy of such information, and shall not be held accountable or responsible in the event that any such inaccuracies are present.

Although the asbestos survey was conducted by a certified asbestos consultant and an accredited laboratory performed the analyses, the asbestos survey described here may not identify all ACMs at the Site. Possible reasons for this include: inaccessible building features or areas, non-performance of destructive sampling, unavailability of as-built drawings (specifying all building materials used in the structure), practical limitation to the number of samples that can be collected, presence of multiple layers of materials, and the analytical method used (Polarized Light Microscopy). Further, although a sample will be collected from each material which appears to be different (based on texture and color); homogeneity of content of similar materials cannot be guaranteed, since similarity of color and texture do not assure that the same ingredients were used in their manufacture. It is possible that of two apparently similar materials, one may contain asbestos and one may not. Therefore, additional sampling and testing may be necessary to provide a higher confidence level regarding the presence of ACMs.

Sincerely,

FREY Environmental, Inc.

John V. Payne

Certified Asbestos Consultant Certification Number: 93-1112

### Attachments

Table 1 - Asbestos Survey Results Summary

Figure 1 – Site Location Map

Figure 2 – Site Sketch Showing Sample Locations Reported to Contain Asbestos

Appendix A - Chain of Custody Records and Laboratory Analytical Reports

## REFERENCES

California Health and Safety Code, Division 20, Chapter 10.4, Section 25919.

- Cal-OSHA (California Occupational Safety and Health Administration), 1989, General Industry Safety Orders: Title 8, Section 5208.
- EPA (Environmental Protection Agency), 1990, Federal Register, National Emission Standards for Hazardous Air Pollutants, Asbestos NESHAP Revision, Final Rule: EPA, Title 40, Code of Federal Regulations Part 61, 20 November 1990, pp. 48406 to 48433.
- , 1987, Federal Register, Asbestos Hazard Emergency Response Act, Asbestos-containing materials in schools, final rule (AHERA) and notice: Environmental Protection Agency, Title 40, Code of Federal Regulations Part 763, 30 October 1987, pp 41826 to 41905.
- \_\_\_\_\_\_, 1985, Guidance for controlling asbestos-containing materials in buildings: Office of Pesticides and toxic Substances, Environmental Protection Agency, Publication Number 560/5/85-024, May 1985.



# ASBESTOS SURVEY RESULTS SUMMARY ASBESTOS SURVEY REPORT 123 CAMINO DE LA RENA SAN DIEGO, CALIFORNIA 92108 Sampling on March 16, 2015

SAMPLE NUMBER <sup>1</sup>	DESCRIPTION OF MATERIAL SAMPLED	SAMPLE LOCATIONS	ESTIMATED AREA COVERED <sup>2</sup>	PLM <sup>3</sup> RESULTS (% asbestos)
Fashion Val	ley Building North			
N1-1,2	Ceiling tile; 2' x 4'; white/gray	North building 1 <sup>st</sup> and 2 <sup>nd</sup> floors	NA	$ND^4$
N2-1,2,3	Floor tile; 1'x1'; off-white/white/light gray; w/ yellow mastic	North building 1 <sup>st</sup> floor, copy room; 2 <sup>nd</sup> floor hallway	NA	ND
N3-1,2	Baseboard; off-white; w/ brown mastic	North building 1st floor	NA	ND
N4-1,2,3	Vinyl sheet flooring; gray-green marble pattern; w/ yellow mastic;	North building 1st and 2nd floor bathrooms	NA	ND
N5-1	Insulation wrap; white/silver on	North building 2 <sup>nd</sup> floor plenum above break room	NA	ND
N6-1	Floor tile; 1'x1'; blue; w/ clear mastic	North building 2 <sup>nd</sup> floor roof access closet	NA	ND
N7-1,2,3	Drywall w/ joint compound; white/gray	North building 1st and 2nd floors	NA	ND
N8-1,2,3	Roofing Sheets w/ crushed rock surface; black/gray	North building roof	NA	ND
N9-1	Roof mastic; black	North building roof	NA	ND
NR1-1,2,3	Stucco wall (exterior); tan/gray; hard	North building exterior walls – all areas	NA	<0.1%
Fashion Val	ley Building East			
E1-1,2	Ceiling tile; 1' x 1'; white/rough/nail-on	East building, 2 <sup>nd</sup> floor RR hallway and RRs	NA	ND
E2-1	Floor tile; 1'x1'; white; w/ yellow mastic; undamaged; non-friable	East building 2 <sup>nd</sup> floor roof access room	100 ft <sup>2</sup>	Tile: 2% CH <sup>5</sup>
E3-1,2,3	TSI hardpack elbow insulation; white; fibrous; damaged; friable	Approx. 20 elbow locations in plenum/attic/roof	20 locations	3% CH 3% AM <sup>5</sup>
E4-1,2	Insulation wrap; paper/foil back	East building Attic / roof	NA	ND
E5-1,2,3	Drywall w/ joint compound; white/gray	East building 1st and 2nd floors	NA	ND
E6-1,2,3	Roofing Sheets w/ crushed rock surface; black/gray	East building roof	NA	ND

# ASBESTOS SURVEY RESULTS SUMMARY ASBESTOS SURVEY REPORT 123 CAMINO DE LA RENA SAN DIEGO, CALIFORNIA 92108 Sampling on March 16, 2015

SAMPLE NUMBER <sup>1</sup>	DESCRIPTION OF MATERIAL SAMPLED	SAMPLE LOCATIONS	ESTIMATED AREA COVERED <sup>2</sup>	PLM <sup>3</sup> RESULTS (% asbestos)
E7-1	Roof mastic; black	East building roof	NA	ND
E8-1	Concrete shingle; rust/gray/hard	East building roof	NA	ND
E9-1,2,3,4	Floor tile; 1'x1'; off-white/light gray; w/ yellow mastic	East building 1 <sup>st</sup> and 2 <sup>nd</sup> floors; Ste 403 and other room's	NA	ND
E10-1,2,3,4	Vinyl sheet flooring; off-white	East building 1st and 2nd floors; Ste 402	NA	ND
E11-1	Baseboard; gray; w/ yellow mastic	East building 1st and 2nd floors; Ste 401	NA	ND
E12-1,2,3	Floor tile; 1'x1'; tan/gray; w/ yellow mastic	East building 2 <sup>nd</sup> floor; super shuttle suite	NA	ND
E13-1,2,3	Ceiling tile; 2' x 4'; white/gray	East building 1st and 2nd floors	NA	ND
ER1-1,2,3	Stucco wall (exterior); tan/gray; hard	NA	ND	
Fashion Vall	ey Building South			
S1-1,2,3	Ceiling tile; 2' x 2'; white	South building 1 <sup>st</sup> and 2 <sup>nd</sup> floors – all areas	NA	ND
S2-1,2	Insulation wrap; paper/foil back	South building 2 <sup>nd</sup> floor roof access	NA	ND
S3-1,2	Ceiling tile; 1' x 1'; gray/white; rough surface	South building Ste 200 stairwell, and Ste 202	NA	ND
S4-1,2	Vinyl sheet flooring; cream; w/ yellow mastic	South building 1st and 2nd floors stairwell	NA	ND
S5-1,2	Carpet glue; yellow	South building 1 <sup>st</sup> and 2 <sup>nd</sup> floor stairwell and Ste 201	NA	ND
S6-1	Baseboard; tan; w/ brown mastic	South building 2 <sup>nd</sup> floor stairwell	NA	ND
S7-1,2	Floor tile; 1'x1'; blue; w/ yellow/white mastic	South building 2 <sup>nd</sup> floor hall and restroom	NA	ND
S8-1,2,3	Drywall w/ joint compound; white; Composite Sample; undamaged; non-friable	First floor interior walls; sample S8-2 collected in telephone and equipment room, north east side of Coldwell Banker Ste	500 ft <sup>2</sup>	<1% CH (S8-2 only)
S9-1	Floor tile; 1'x1'; tan/yellow; w/ tan mastic	South building 2 <sup>nd</sup> floor Ste 202	NA	ND
S10-1	Baseboard; black; w/ white mastic	South building 2 <sup>nd</sup> floor Ste 201	NA	ND

# ASBESTOS SURVEY RESULTS SUMMARY ASBESTOS SURVEY REPORT 123 CAMINO DE LA RENA SAN DIEGO, CALIFORNIA 92108 Sampling on March 16, 2015

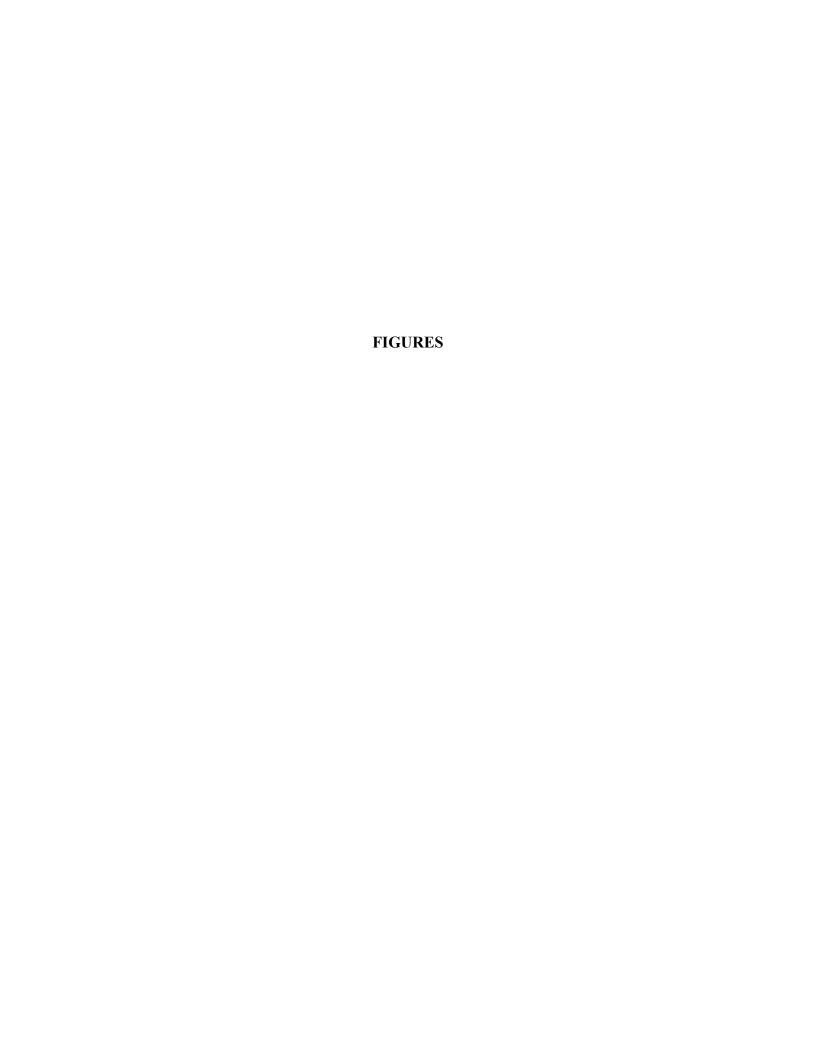
SAMPLE NUMBER <sup>1</sup>	DESCRIPTION OF MATERIAL SAMPLED	SAMPLE LOCATIONS	ESTIMATED AREA COVERED <sup>2</sup>	PLM <sup>3</sup> RESULTS (% asbestos)
S11-1,2	Floor tile; 1'x1'; Taupe; w/ black & yellow mastic;	South building 1st floor telephone and break	165 ft <sup>2</sup>	Tile: ND
	undamaged; non-friable	room, Coldwell Banker Ste		Mastic: 5% CH
S12-1	Baseboard; black; w/ gray mastic	South building 1st floor telephone/equip room	NA	ND
S13-1,2,3	Ceiling tile; 2' x 4'; white/gray	South building 1st floor; Vacant office	NA	ND
S14-1	Concrete shingle; rust/gray/hard	South building roof	NA	ND
SR1-1,2,3	Roofing Sheets w/ crushed rock surface; black/gray	South building roof	NA	ND
SR2-1,2,3	Roof mastic; black	South building roof	NA	ND
SR3-1,2,3	Floor tile; 1'x1'; gray/white; w/ yellow mastic	South building 2 <sup>nd</sup> floor planning room	NA	ND
SR4-1	Baseboard; black; w/ gray mastic	South building 2 <sup>nd</sup> floor Ste 202	NA	ND
SR5-1,2,3	Stucco wall (exterior); tan/gray; hard	South building exterior walls – all areas	NA	ND*
Fashion Val	ley Building West		•	
W1-1,2,3	Floor tile; 1'x1'; white w/ black marks; w/ yellow mastic	West building 1st floor; vault and break room	NA	ND
W2-1	Baseboard; gray; w/ white mastic	West building 1st floor vault	NA	ND
W3-1	Ceiling tile; 2' x 2'; white/gray	West building hallway to RR	NA	ND
W4-1	Drywall w/ joint compound; white	West building 1st and 2nd floors	NA	ND
W5-1,2	Floor tile; 1'x1'; beige; w/ black mastic;	West building 1 <sup>st</sup> floor, northwest corner,	190 ft <sup>2</sup>	Tile: 7% CH
	undamaged; non-friable	electrical room and water heater closet		Mastic: 4% CH
W6-1,2	Vinyl sheet flooring; marble pattern; gray/brown/rust; w/ yellow mastic	West building 1st floor mens RR	NA	ND
W7-1,2,3	Vinyl sheet flooring; yellow; w/ yellow mastic	West building 1st floor break room	NA	ND
W8-1	Flooring below (W1-3); gray; w/ yellow mastic	West building 1st floor break room	NA	ND
W9-1	Floor tile; 1'x1'; blue; w/ yellow mastic	West building 2 <sup>nd</sup> floor, break room, new	NA	ND
W10-1,2,3	Ceiling tile; 2' x 4'; white/gray	West building 2 <sup>nd</sup> floor offices	NA	ND

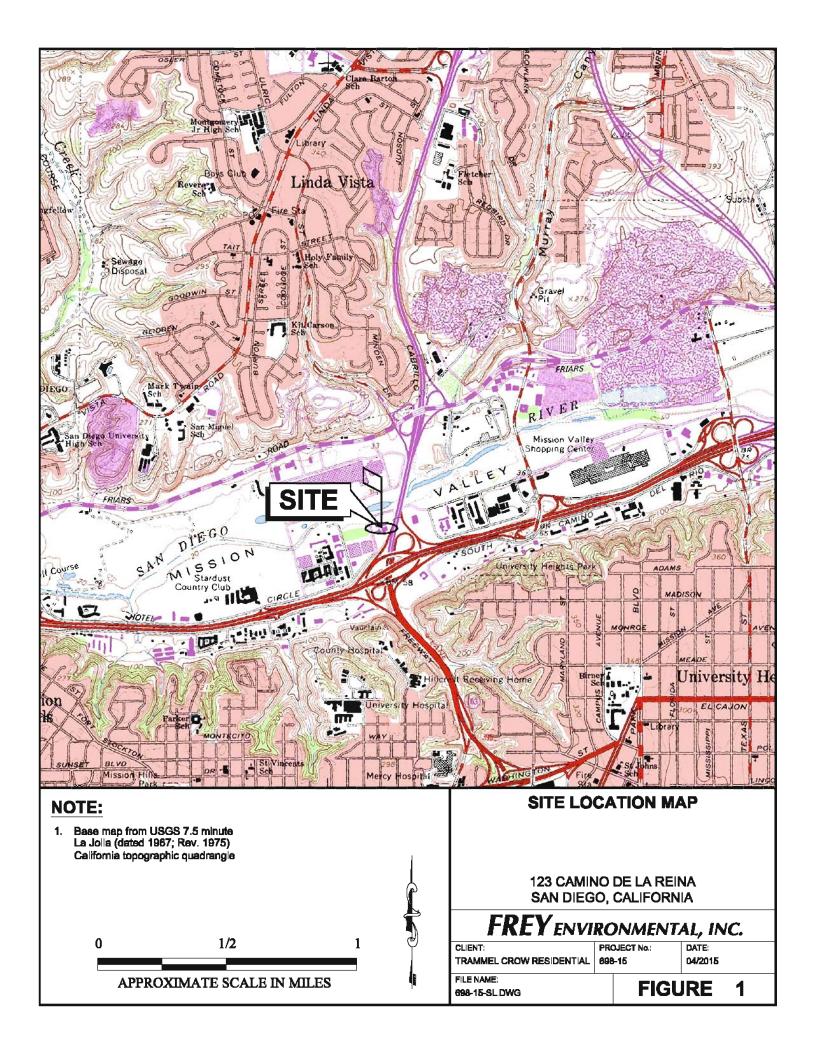
# ASBESTOS SURVEY RESULTS SUMMARY ASBESTOS SURVEY REPORT 123 CAMINO DE LA RENA SAN DIEGO, CALIFORNIA 92108 Sampling on March 16, 2015

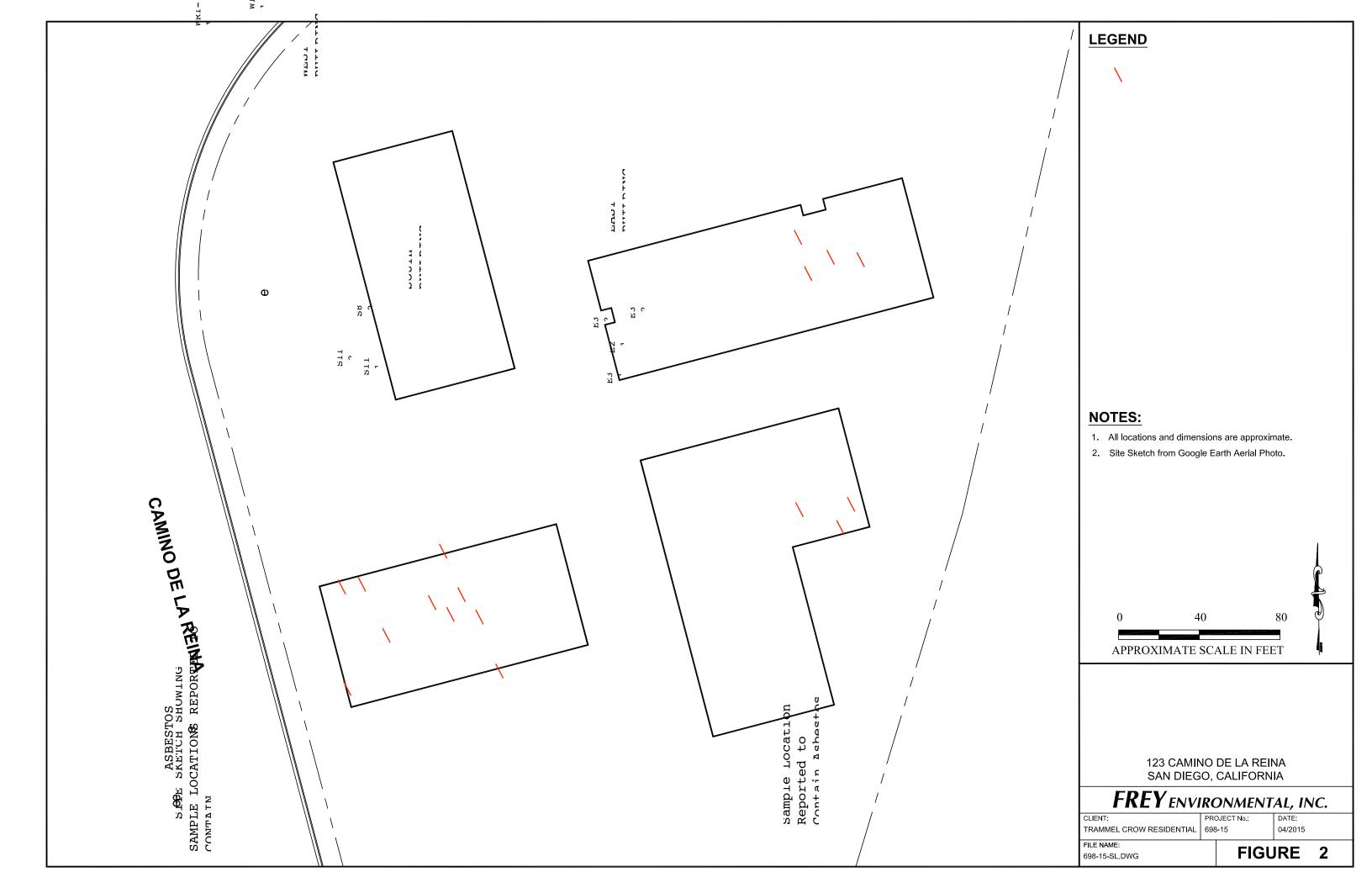
SAMPLE NUMBER <sup>1</sup>	DESCRIPTION OF MATERIAL SAMPLED	SAMPLE LOCATIONS	ESTIMATED AREA COVERED <sup>2</sup>	PLM <sup>3</sup> RESULTS (% asbestos)
W11-1	Black floor mastic; undamaged; non-friable	Second floor, west side janitor closet / plenum access room	65 ft <sup>2</sup>	Mastic: 3% CH
W12-1,2,3	Vinyl sheet flooring; gray/black; w/ yellow mastic	West building 2 <sup>nd</sup> floor men's/women's RR	NA	ND
W13-1,2,3	TSI hardpack elbow insulation; white; fibrous; undamaged; friable	Approx. 20 elbow locations in plenum	20 locations	17% CH
W14-1	Roof mastic; black; undamaged; non-friable	West building roof – east vent seal	10 ft <sup>2</sup>	3% CH
W15-1	Roofing Sheets; silicone/rubber	West building roof	NA	ND
W16-1	HVAC seal; gray	West building roof – HVAC unit seal	NA	ND
W17-1	Concrete shingle; rust/gray/hard	West building roof	NA	ND
WR1-1,2,3	Stucco wall (exterior); tan/yellow/gray; hard; undamaged; non-friable	1 <sup>st</sup> floor and 2 <sup>nd</sup> floor exterior walls (all exterior sides of Building West)	3,200 ft <sup>2</sup>	0.3% CH
WR2-1,2,3	Textured decking material; gray/red	2 <sup>nd</sup> floor all exterior walkways and stairwells – all buildings	NA	ND

#### Notes:

- Sample number.
- Estimated area covered is only provided for samples of materials reported to contain asbestos.
- PLM = polarized-light microscopy. EPA Method No. 600/M4-82-020.
- ND = no asbestos detected. \* = point-counting analysis conducted to confirm asbestos concentration as greater, or less than, 0.1%.
- <sup>5</sup> CH = Chrysotile asbestos; AM= Amosite asbestos; TR= Tremolite asbestos.
  - NA = not applicable. Unk=unknown.
  - FT = Floor tile; FL = Flooring; MS = floor mastic
- One of three samples collected from joint compound at the South Building (sample S8-2) was reported to contain trace asbestos concentrations (<1%). Due to insufficient material, the laboratory could not point-count sample S8-2. Additional testing would be required to provide a level of confidence that asbestos is not present above 0.1% in the South Building.







# APPENDIX A

# CHAIN OF CUSTODY RECORDS AND LABORATORY ANALYTICAL REPORTS

Lab Report Page 1 of 5 (312) RM 3/20/2015



2211 West Orangewood Avenue Orange, CA 92868 Tel: (714) 937-0750 Fax: (714) 937-0755 www.envirocheck.com (800) 665-7586



NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

### Asbestos Laboratory Test Report

Customer: Frey Environmental, Inc.

Attention: John Payne 2817A Lafayette Avenue

Newport Beach, CA 92663

Job Location: Fashion Valley **Building North** 

Job #: 698-15

Amended Report: Point Count\*

					Sub-sample					
Sample # 1000-Point Count*	N1-1	N1-2	N2-1	N2-2	N2-2a	N2-3	N3-1	N3-2	N4-1	N4-2
Asbestos	No	No	No	No	No	No	No	No	No	No
Amount	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Type										

Other

Amounts,

Гу	pes

Location	Building North	Building North	Building North	Building North	Building North	Building North	Building North	Building North	Building North	Building North
Material	Ceiling Tile	Ceiling Tile	Vinyl Composition Tile	Vinyl Composition Tile	Vinyl Tile Adhesive	Vinyl Composition Tile	Vinyl Base Cove	Vinyl Base Cove	Vinyl Sheet Flooring	Vinyl Sheet Flooring
Notes										
Color	Gray	Gray	White	White	Yellow	White	White	White	Gray, Beige	Gray, Beige
Homogeneous	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	No
Materials:										
Minerals	Х	х	х	х	х	х	х	х	х	х
Calcite			х	х		Х	Х	Х	Х	Х
Gypsum										
Mica										
Perlite	Х	Х								
Plastic			Х	Х		Х	Х	Х		
Paint	White	White								
Tar										
Cellulose	60%	60%	<1%					<1%	15%	15%
Fiberglass Synthetic Fib.	25%	30%								
Other 1										
Other 2										
Other 3										
Method							•			•

Analyst:

None

None

None

None

Date: 03/23/2015 Jeff Conkel QC by: JC

None

None

None

None

None

None

Point

Departures

Date: 03/31/2015 Count: QC by: JC

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis.

Lab Report Page 2 of 5 (312) RM 3/20/2015



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(800) 665-7586



NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

## **Asbestos Laboratory Test Report**

Customer: Frey Environmental, Inc. Attention: John Payne

2817A Lafayette Avenue

Newport Beach, CA 92663

Job Location: Fashion Valley **Building North** 

Job #: 698-15

Tymo										
Amount	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Asbestos	No	No	No	No	No	No	No	No	No	No
1000-Point Count*										
Sample #	N4-3	N4-3a	N5-1	N6-1	N7-1	N7-2	N7-3	N8-1	N8-2	N8-3
		Sub-sample								

Other

Amounts,

Types

Location	Building North	Building North	Building North	Building North	Building North	Building North	Building North	Building North	Building North	Building North
Material	Vinyl Sheet Flooring	Vinyl Sheet Adhesive	Insulation Wrap	Vinyl Composition Tile	Drywall	Drywall	Drywall	Roofing	Roofing	Roofing
Notes										
Color	Gray, Beige	Tan	Silver, White	Gray	White	White	White	Black, White	Black, White	Black, White
Homogeneous	No	Yes	No	Yes	Yes	Yes	Yes	No	No	No
Materials:										
Minerals	Х	Х	х	Х	Х	х	х	х	х	х
Calcite	Х			Х				х	х	Х
Gypsum					Х	Х	Х			
Mica					Х					
Perlite										
Plastic	Х			Х						
Paint						White				
Tar								Х	Х	Х
Cellulose	15%		90%		<1%	<1%	2%	5%	2%	3%
Fiberglass					<1%	<1%	<1%	5%	5%	5%
Synthetic Fib.										
Other 1			Foil Wrap			Paper	Paper	Rocks	Rocks	Rocks
Other 2								Plastic Wrap		
Other 3										
Method										
Departures	None	None	None	None	None	None	None	None	None	None

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis.

Lab Report Page 3 of 5 (312) RM 3/20/2015



2211 West Orangewood Avenue Orange, CA 92868 Tel: (714) 937-0750 Fax: (714) 937-0755 www.envirocheck.com

(800) 665-7586



NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

### **Asbestos Laboratory Test Report**

Customer: Frey Environmental, Inc.

Attention: John Payne

Newport Beach, CA 92663

Job Location: Fashion Valley **Building North** 

Job #: 698-15

2817A Lafayette Avenue

			Sub-sample		Sub-sample		Sub-sample
Sample #	N9-1	NR1-1	NR1-1a	NR1-2	NR1-2a	NR1-3	NR1-3a
1000-Point Count*		<0.1%		<0.1%		<0.1%	
Asbestos	No	Yes	No	Yes	No	Yes	No
Amount	N.D.	<1%	N.D.	<1%	N.D.	<1%	N.D.
Туре		Chrysotile		Chrysotile		Chrysotile	
0.1	· ·	· ·	·	·	· ·	·	· ·

Other

Amounts, Types

Location	Building North								
Material	Mastic	Stucco	Stucco	Stucco	Stucco	Stucco	Stucco		
Notes									
Color	Black	Off White	Gray	Off White	Gray	Off White	Gray		
Homogeneous	No	No	Yes	No	Yes	No	Yes		
Materials:									
Minerals	Х	Х	Х	Х	Х	х	X		
Calcita	Y	Y	X	X	Y	Y	X		

Minerals
Calcite
Gypsum
Mica
Perlite
Plastic
Paint
Tar
Cellulose
Fiberglass
Synthetic Fib.
Other 1
Other 2
Other 3
Method

Departures

None

None

None

None

	Х	х	Х	Х	Х	Х	Х		
	х	х	х	x	Х	Х	Х		
	Silver								
	Х								
	5%								
).									
	•								
_	•	•	•		•	•		•	

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis. \*1000-Point Count not covered by NVLAP accreditation. \*\*Various sample locations combined for composite purposes. \*\*\*Not covered by NVLAP accreditation.

None

None

None

Date Sampled: 3   16   15   15   15   15   15   15   15	ENV	IROC	HECK, INC.	V	<u>Cha</u>	in of C	ustod	Ľ		
Client: FRA KNYRON Mental Trac. Project Name: Francisco Valley  Contact Name: John V. Bryne  Address: LS17 A Lagrang He And Address:  Address: LS17 A Lagrang He And Address:  City, State, Zip: Veryor Brook Ca 42663  City, State, Zip: Additional Info:  Fax:    D	2211 W. Or Orange, C. Ph. (800) 6	rangewood A 92868 665-7586 • I	l Ave. Fax: (714) 937-0755		Sampled			rl		Turnaround Time (T.A.T. Please see Key below
Contact Name: Solm V. Bayne   Contact:   Bloz.   Warner   Contact:   Bloz.   City. State. Zip:   Address:   City. State. Zip:   Additional Info:   Time   Contact:   City. State. Zip:   Additional Info:   City. State. Zip:   Air   Bulk   City. State. Zip:   City. State. Zip			<del> </del>	ne.		me: FA	shion	Valler	/	
Address: ZSIT A LAMANITE AND Address:  City, State, Zip: Nerget Besch A 47663  City, State, Zip:  Additional Info:  Fax:    D							1 B	Hos. (	N	·
City, State, Zip: Newyork Beack Co 41663	Address:	2817 A	carmette god	- 190	Address:					•
Ph: Additional Info:  Fax:    D				2663	City, State,	, Zip: /				☐ Air ☐ Bulk
ID   Lab ID   Location   Material   Sq/FT   Time   On   Off   LPM   Media   Surface Swabs			,		Additional	Info:				
D   Lab   D   Location   Material   Sq/FT   On   Off   LPM   Media   Surface Swabs	Fax:		·							□ Viable Mold
N2-1-23				Material	Sq/FT			LPM	Media	
N5-	N2-1,23 N3-1,2		Building-North							☐ Air ☐ Bulk ☐ Swab ☐ Sewage Screen ☐ Gram-staining
N8-12-3	N5-1 N6-1									
NRI-123 In 503 1550  Lead  Paint chips Wipes [ Soil Other:	N8-1,2,3									☐ Asbestos PCM (Air) NIOSH 7400
□ Other		11,5031	950			1				□ <b>Lead</b> □ Paint chips □Wipes □ Air □ Soil □Other:
										□ Other

Date	Time	*Samples Relinquished By	Samples Received By
3/15	1130	M	Metalle 3/23 @ 8:38
1 113			1el 3/24/15

\*By signing above, Client acknowledges that he/she/it has read the terms and conditions on the reverse side hereof, and agrees to be bound thereby.

## Turnaround Time (T.A.T.) Key and Definitions:

T.A.T. starts upon receipt and acceptance of samples by the laboratory.

Same day = samples must be received by lab before 2pm for same business day results

Next day = results provided by end of next business day

2 days = results provided by end of 2nd business day (e.g. received Mon., results by Wed.)

3-5 days = results provided by end of 5th business day or sooner

6-10 days = results provided by end of business day or sooner

Lab Report Page 1 of 4 (312) RM 3/20/2015



2211 West Orangewood Avenue Orange, CA 92868 Tel: (714) 937-0750 Fax: (714) 937-0755 www.envirocheck.com

(800) 665-7586



NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

### **Asbestos Laboratory Test Report**

Customer: Frey Environmental, Inc.

Attention: John Payne

2817A Lafayette Avenue Newport Beach, CA 92663 Job Location: Fashion Valley **Building East** 

Job #: 698-15

Sample #	E1-1	E1-2	E2-1	E3-1	E3-2	E3-3	E4-1	E4-2	E5-1	E5-2
Asbestos	No	No	Yes	Yes	Yes	Yes	No	No	No	No
Amount	N.D.	N.D.	2%	3%	3%	3%	N.D.	N.D.	N.D.	N.D.
Type			Chrysotile	Amosite	Amosite	Chrysotile				

Other Amounts,

Types

Location	Building East	Building East	Building East	Building East	Building East	Building East	Building East	Building East	Building East	Building East
Material	Ceiling Tile	Ceiling Tile	Vinyl Composition Tile	Insulation	Insulation	Insulation	Insulation Wrap	Insulation Wrap	Drywall	Drywall
Notes										
Color	White	White	White & Yellow	White	White	White	Silver & White	Silver & White	Tan & White	Tan & White
Homogeneous	Yes	Yes	No	No	No	No	No	No	No	No
Materials:										
Minerals	х	х	х	х	х	Х	х	х	х	Х
Calcite			х							
Gypsum									Х	Х
Mica										
Perlite										
Plastic			X							
Paint										
Tar										
Cellulose									2%	<1%
Fiberglass Synthetic Fib.	70%	70%		10%	10%	10%	25%	25%		
Other 1			Adhesive				Foil	Foil	Paper	Paper
Other 2										
Other 3 Method										
Departures	None	None	None	None	None	None	None	None	None	None

Analyst: Heather Kilgore

QC by: HK

Date: 03/24/2015

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis. \*1000-Point Count not covered by NVLAP accreditation. \*\*Various sample locations combined for composite purposes. \*\*\*Not covered by NVLAP accreditation.

Lab Report Page 2 of 4 (312) RM 3/20/2015



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(800) 665-7586



NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

## **Asbestos Laboratory Test Report**

Customer: Frey Environmental, Inc. Attention: John Payne

2817A Lafayette Avenue

Newport Beach, CA 92663

Job Location: Fashion Valley **Building East** 

Job #: 698-15

Sample #	E5-3	E6-1	E6-2	E6-3	E7-1	E8-1	E9-1	E9-2	E9-3	E9-4
Asbestos	No									
Amount	N.D.									
Туре										
Other										
Amounts,										
Types										
Location	Building East									
Material	Drywall	Roofing	Roofing	Roofing	Roofing	Concrete	Vinyl	Vinyl	Vinyl	Vinyl
							Composition	Composition	Composition	Composition

Material	Drywall	Roofing	Roofing	Roofing	Roofing	Concrete	Vinyl	Vinyl	Vinyl	Vinyl
							Composition Tile	Composition Tile	Composition Tile	Composition Tile
Notes										
Color	White & Tan	Black & Gray	Black & Gray	Black & Gray	Black	Gray	White & Yellow	White	White	White
Homogeneous	No	No	No	No	No	Yes	No	Yes	Yes	Yes
Materials:										
Minerals	х	Х	х	Х	х	х	Х	х	Х	Х
Calcite		Х	Х	Х	Х		х	х	Х	Х
Gypsum	х									
Mica						х				
Perlite										
Plastic							Х	Х	Х	Х
Paint										
Tar		Х	Х	Х	X					
Cellulose	<1%				15%					
Fiberglass		000/	450/	450/		ļ				
Synthetic Fib.		20%	15%	15%			A 11 ·			
Other 1	Paper	Rocks	Rocks	Rocks			Adhesive			
Other 2										
Other 3										
Method Departures	None	None	None	None	None	None	None	None	None	None

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis. \*1000-Point Count not covered by NVLAP accreditation. \*\*Various sample locations combined for composite purposes. \*\*\*Not covered by NVLAP accreditation.

Lab Report Page 3 of 4 (312) RM 3/20/2015



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(800) 665-7586



NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

### **Asbestos Laboratory Test Report**

Customer: Frey Environmental, Inc.

Attention: John Payne

2817A Lafayette Avenue Newport Beach, CA 92663 Job Location: Fashion Valley **Building East** 

Job #: 698-15

	Newport Bea	icii, OA 92000								
Sample #	E10-1	E10-2	E10-3	E10-4	E11-1	E12-1	E12-2	E12-3	E13-1	E13-2
Asbestos	No	No	No	No	No	No	No	No	No	No
Amount	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Туре										
Other										
Amounts,										
Types										
Location	Building East	Building East	Building East	Building East	Building East	Building East	Building East	Building East	Building East	Building East
Material	Vinyl Sheet Flooring	Vinyl Sheet Flooring	Vinyl Sheet Flooring	Vinyl Sheet Flooring	Vinyl Base Cove	Vinyl Composition Tile	Vinyl Composition Tile	Vinyl Composition Tile	Ceiling Tile	Ceiling Tile
Notes										
Color	Light Gray	Light Gray	Light Gray	Light Gray	Cream	Tan	Tan	Tan	Tan & White	Tan & White
Homogeneous	No	No	No	No	Yes	Yes	Yes	Yes	No	No
Materials:										
Minerals	Х	Х	х	Х	Х	Х	х	Х	Х	Х
Calcite	Х	х	Х	Х	Х	Х	х	х		
Gypsum										
Mica										
Perlite									Х	Х
Plastic	Х	Х	х	Х	Х	Х	Х	Х		
Paint -									White	White
Tar		100/	7%	10%					55%	55%
Cellulose	3%	10% 2%	7% 2%	10%						55% 40%
Fiberglass Synthetic Fib.		2%	2%	2%					40%	40%
Other 1	Adhesive									
Other 2										
Other 3										
Method Departures	None	None	None	None	None	None	None	None	None	None

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis. \*1000-Point Count not covered by NVLAP accreditation. \*\*Various sample locations combined for composite purposes. \*\*\*Not covered by NVLAP accreditation.

Lab Report Page 4 of 4 (312) RM 3/20/2015



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(800) 665-7586



NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

### **Asbestos Laboratory Test Report**

Customer: Frey Environmental, Inc. Attention: John Payne

**Building East** 

None

2817A Lafayette Avenue

Newport Beach, CA 92663

Job Location: Fashion Valley Building East

Job #: 698-15

Asbestos	No	No	No	No
Amount -	N.D.	N.D.	N.D.	N.D.

Type

Other Amounts,

Amounts
Types
Location

Material	Ceiling Tile	Plaster	Plaster	Plaster

**Building East** 

**Building East** 

**Building East** 

Notes

Color White & Tan Gray Gray Gray

Homogeneous No Yes Yes Yes

None

None

None

Materials:

Minerals
Calcite
Gypsum
Mica
Perlite
Plastic
Paint
Tar
Cellulose
Fiberglass
Synthetic Fib.
Other 1
Other 2
Other 3

Method Departures

х	Х	Х	х			
	Х	X	Х			
Х						
White						
55%						
40%						

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis.

\*1000-Point Count not covered by NVLAP accreditation. \*\*Various sample locations combined for composite purposes. \*\*\*Not covered by NVLAP accreditation.

ENV	IROC	HECK, INC.	$\mathbf{V}$	Chai	n of C	ustody	_		
2211 W. O. Orange, C. Ph. (800) 6	rangewood	i Ave. Fax: (714) 937-0755		Date Sam Sampled I P.O. #:	pled: 3/3 By:	16/15 Pay	ne		Turnaround Time (T.A.T.)  Please see Key below  □Same day □Next day  □2 days ▼3-5 days
Client: 7	Fren K	noveramental,	Enc.	Project Na	me: Ka	shinn	Valle	y	☐6-10 days ☐ Other:
Contact N	Name: 🗐	ohn V. Jayne		Contact:			Bli	3.(E)	Procedure Requested
		CARMEHE Are		Address:					Non-viable Mold
City, Stat	e, Zip: M	support But CA	192663	City, State,	Zip:				☐ Air ☐ Bulk
Ph: (99	19 723	-1645		Additional	Info:				☐ Tape Lifts ☐ Surface Swabs
		ne e fregine con	1						□ Viable Mold
ID	Lab ID	Location	Material	Sq/FT	Time On	Time Off	LPM	Media	☐ Air ☐ Bulk ☐ Surface Swabs
E1-1,2 E2-1 E3-1,2,3	1952- 1952- 1953- 1954- 1954- 1956-	BUILDING - EAST							□ Bacteria □ Air □ Bulk □ Swab □ Sewage Screen □ Gram-staining □ Counts only
75-12,3 E6-1,2,3	1962-04								Asbestos Bulk EPA 600-93/116
E7-1 E8-1 E9-1,234	1966				71				☐ Asbestos PCM (Air) NIOSH 7400
E11-1	1971974								□ Lead □ Paint chips □ Wipes □ Air □ Soil □ Other:
E12-1,2,3 E13-1,2,3 XER1-1,2,	197981								□ Other
0/1:	Time   1	Samples Relinquished By		s Received By 3/23 € 6:3	8	T.A.T. starts up  Same day =  Next day =  2 days = res	on receipt and samples must results provided sults provided b	be received by lab be do by end of next bus	les by the laboratory, sefore 2pm for same business day results tiness day ss day (e.g. received Mon., results by Wed.)

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6-10 days = results provided by end of business day or sooner

signing above, Client acknowledges that he/she/it has read the terms and conditions

'e reverse side hereof, and agrees to be bound thereby.

Lab Report Page 1 of 5 (312) RM 3/20/2015



2211 West Orangewood Avenue Orange, CA 92868 Tel: (714) 937-0750 Fax: (714) 937-0755 www.envirocheck.com (800) 665-7586



NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

### Asbestos Laboratory Test Report

Customer: Frey Environmental, Inc.

Attention: John Payne

2817A Lafayette Avenue

Newport Beach, CA 92663

Job Location: Fashion Valley

**Building South** 

Cove

None

Adhesive

Cove

Job #: 698-15

	·	•		Amended	d Report: Poi	nt Count*				
									Sub-sample	
Sample # 1000-Point Count*	S1-1	S1-2	S1-3	S2-1	S2-2	S3-1	S3-2	S4-1	S4-1a	S4-2
Asbestos	No									
Amount	N.D.									
Туре										
Other										
Amounts,										
Types										
Location	Building South									
Material	Ceiling Tile	Ceiling Tile	Ceiling Tile	Insulation	Insulation	Ceiling Tile	Ceiling Tile	Vinyl Base	Base Cove	Vinyl Base

								Cove	Adriesive	Cove
Notes										
Color	Gray & White	Gray & White	Gray & White	Silver, Gold & Beige	Silver, Beige & Gold	White & Gray	White & Gray	White	Clear	White
Homogeneous	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
Materials:										
Minerals	X	Х	Х	Х	X	X	X		Х	
Calcite	,		·					Х	Х	Х
Gypsum	Х	Х	Х							
Mica										
Perlite	Х	Х	Х							
Plastic								X		X
Paint	White	White				White	White			
Tar										
Cellulose	35%	30%	30%			<1%	<1%		<1%	
Fiberglass	20%	25%	25%	7%	8%	95%	95%			
Synthetic Fib.										
Other 1				Paper	Paper	Binder	Binder			
Other 2				Adhesive	Adhesive					
Other 3				Metallic Wrap	Metallic Wrap					

Analysts: Heather Kilgore

None

None

None

None

None

Date: 03/25/2015 QC by: HK

None

Point

Method

Departures

Count:

None

None

Date: 3/31/15

None

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis.

Lab Report Page 2 of 5 (312) RM 3/20/2015



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NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

# **Asbestos Laboratory Test Report**

Customer: Frey Environmental, Inc. Attention: John Payne

2817A Lafayette Avenue

Newport Beach, CA 92663

Job Location: Fashion Valley

**Building South** 

Job #: 698-15

	Sub-sample		Sub-sample				Sub-sample			
Sample # 1000-Point Count*	S4-2a	S5-1	S5-1a	S5-2	S6-1	S7-1	S7-1a	S7-2	S8-1	S8-2
Asbestos	No	No	No	No	No	No	No	No	No	Yes
Amount	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	<1%
Туре										Chrysotile

Other

Amounts, Types

Other 3 Method

Departures

None

None

Location	Building South	Building South	Building South	Building South	Building South	Building South	Building South	Building South	Building South	Building South
Material	Base Cove Adhesive	Adhesive	Mud	Adhesive	Vinyl Base Cove	Vinyl Composition Tile	Leveling Compound	Vinyl Composition Tile	Drywall	Drywall & Mud Composition
Notes										
Color	Clear	Off White & Brown	Off White	Yellow	Cream	Dark Gray	Yellow & Gray	Dark Gray	White & Tan	Tan & White
Homogeneous	No	No	No	Yes	Yes	Yes	No	Yes	No	No
Materials:										
Minerals	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
Calcite		Х	Х	Х	Х	Х	Х	Х		Х
Gypsum									Х	х
Mica										Х
Perlite										
Plastic					Х	Х		Х		
Paint										Tan
Tar										
Cellulose	3%	<1%					3%		2%	<1%
Fiberglass									<1%	<1%
Synthetic Fib.		<1%								
Other 1							Adhesive	Adhesive	Paper	Paper
Other 2										

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis.

None

None

None

None

None

None

\*1000-Point Count not covered by NVLAP accreditation. \*\*Various sample locations combined for composite purposes. \*\*\*Not covered by NVLAP accreditation.

None

None

Lab Report Page 3 of 5 (312) RM 3/20/2015



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NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

## **Asbestos Laboratory Test Report**

Departures

None

None

None

None

Customer: Frey Environmental, Inc. Attention: John Payne

2817A Lafayette Avenue

Newport Beach, CA 92663

Job Location: Fashion Valley **Building South** 

Job #: 698-15

				Sub-sample						
Sample # 1000-Point	S8-3	S9-1	S10-1	S10-1a	S11-1	S11-2	S11-2.1	S12-1	S13-1	S13-2
Count*										
Asbestos	No	No	No	No	No	No	Yes	No	No	No
Amount	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	5%	N.D.	N.D.	N.D.
Туре							Chrysotile			
Other										
Amounts,										
Types										
Location	<b>Building South</b>	Building South	<b>Building South</b>	<b>Building South</b>	<b>Building South</b>	<b>Building South</b>	Building South	<b>Building South</b>	<b>Building South</b>	Building South
Material	Drywall	Vinyl Composition Tile	Vinyl Base Cove	Vinyl Base Cove Adhesive	Vinyl Composition Tile	Vinyl Composition Tile	Vinyl Floor Mastic	Vinyl Base Cove	Ceiling Tile	Ceiling Tile
Notes										
Color	Tan & White	Yellow & Cream	Black	Cream	Taupe & Yellow	Taupe	Black & Yellow	Taupe & Cream	White & Tan	White & Tan
Homogeneous	No	No	Yes	No	No	Yes	No	No	No	No
Materials:										
Minerals	х	х	х	х	Х	Х	х	х	х	х
Calcite		х	х	х	Х	х	х	х		
Gypsum	Х									
Mica		Х		х						
Perlite									Х	Х
Plastic		Х	Х		X	Х		Х		
Paint									White	White
Tar							х			
Cellulose	2%								80%	80%
Fiberglass	<1%									
Synthetic Fib.										
Other 1	Paper	Adhesive			Adhesive			Adhesive		
Other 2										
Other 3										
Method										

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis.

None

None

None

None

None

None

Lab Report Page 4 of 5 (312) RM 3/20/2015



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NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

## **Asbestos Laboratory Test Report**

Departures

None

None

None

None

Customer: Frey Environmental, Inc.

Attention: John Payne 2817A Lafayette Avenue Job Location: Fashion Valley

**Building South** 

None

None

None

Job #: 698-15

	Newport Bea	ach, CA 92663	3			000 m.				
Sample # 1000-Point Count*	S13-3	S14-1	SR1-1	SR1-2	SR1-3	SR2-1	SR2-2	SR2-3	SR3-1	SR3-2
Asbestos	No	No	No	No	No	No	No	No	No	No
Amount	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Туре										
Other Amounts, Types										
Location		Building South								
Material	Ceiling Tile	Concrete	Roofing	Roofing	Roofing	Roofing	Roofing	Roofing	Vinyl Composition Tile	Vinyl Composition Tile
Notes										
Color	White & Tan	Brown	Black	Black	Black	Black	Black	Black	Yellow & Gray	Yellow & Gray
Homogeneous	No	Yes	No	No						
Materials:										
Minerals	х	х	х	х	х	х	х	х	х	Х
Calcite			Х	Х	Х	Х	Х	Х	Х	Х
Gypsum										
Mica		Х								
Perlite	Х									
Plastic									х	Х
Paint -	White									
Tar	000/		Х	Х	Х	Х	X	Χ		
Cellulose	80%						15%	20%		
Fiberglass Synthetic Fib.			15%	20%	15%					
Other 1			Rocks	Rocks	Rocks	Rocks			Adhesive	Leveling Compound
Other 2										Adhesive
Other 3										
Method	1		1				1			

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis.

None

None

None

Lab Report Page 5 of 5 (312) RM 3/20/2015



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NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

## **Asbestos Laboratory Test Report**

Customer: Frey Environmental, Inc. Attention: John Payne

2817A Lafayette Avenue

Newport Beach, CA 92663

Job Location: Fashion Valley Building South

Job #: 698-15

Туре							Chrysotile	
Amount	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	<1%	N.D.
Asbestos	No	No	No	No	No	No	Yes	No
1000-Point Count*							<0.1%	
Sample #	SR3-2.1	SR3-3	SR3-3.1	SR4-1	SR5-1	SR5-2	SR5-3	Sub-sample SR5-3a

Ruilding South Ruildi

Other

Amounts,

Types

Location	Building South	Building South	Building South	Building South	Building South	Building South	Building South	Building South		
Material	Plaster	Vinyl Composition Tile	Plaster	Vinyl Base Cove	Stucco	Stucco	Stucco	Stucco		
Notes										
Color	Gray	Yellow & Gray	Gray	Taupe	Light Gray	Light Gray	Cream & Tan	Gray		
Homogeneous	Yes	No	Yes	Yes	Yes	Yes	No	Yes		
Materials:										
Minerals	Х	Х	Х	Х	Х	х	х	Х		
Calcite		х		х						
Gypsum										
Mica	Х		Х		Х	х	Х	Х		
Perlite										
Plastic		Х		Х						
Paint							Cream		<u> </u>	
Tar									<u> </u>	
Cellulose			<1%			<1%				
Fiberglass									ļ	
Synthetic Fib.									ļ	
Other 1		Leveling Compound							_	
Other 2		Adhesive								
Other 3							-			
Method	None	None	None	None	None	None	None	None		•
Departures	INOTIE	INOTIE	INOTIE	NOTIC	INOTIE	NOHE	INOTIC	NOTIE		

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis.

\*1000-Point Count not covered by NVLAP accreditation. \*\*Various sample locations combined for composite purposes. \*\*\*Not covered by NVLAP accreditation.

ENV	IROC	CHECK, INC.	V	Cna	n of C	ustod	_				
2211 W. Or Orange, C.	A 92868			Date Sam Sampled		John P.	yre		Turnaround Time (T.A.T. Please see Key below		
vww.envir	ocheckind	Fax: (714) 937-0755 c.com		P.O. #:	698-	15			□Same day □Next day □2 days ♣3-5 days		
Client: T-	20011	Environmental +	Ne	Project Na	-	-	Vallow	,	6-10 days Other:		
Contact N	lame:	hn V. Payne		Contact:	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(3)	o-10 daysOther				
		A capacité Ane		Address:					Procedure Requeste		
City Ctate	ZOI / /	of company x por	92663		<b>7</b> :				Non-viable Mold		
	e, Zip: ///	engon Bell, ex	72607	City, State,					☐ Air ☐ Bulk ☐ Tape Lifts		
Ph:			-	Additional	Into:				☐ Surface Swabs		
Fax:	510					_			□ Viable Mold		
ID	Lab ID	Location	Material	Sq/FT	Time On	Time Off	LPM	Media	☐ Air ☐ Bulk ☐ Surface Swabs		
51-123		Building-South		<u> </u>					□ Bacteria		
52-1,2						·			☐ Air ☐ Bulk ☐ Swab☐ Sewage Screen		
53-12									☐ Gram-staining		
34-1,2		1 3							☐ Counts only		
55-12			_			- 17 m			Asbestos Bulk		
36-1	26 2 2 2 2 2 2								EPA 600-93/116		
57-12 58-143									□ Asbestos PCM (Air) NIOSH 7400		
59-j 510-j									□ Lead		
511-1,2				1					☐ Paint chips ☐ Wipes ☐ Air		
512-1									□Soil □Other:		
513 1,23		V							□ Other		
314-1		V V							Other		
	155				2						
Date Tir	ne .	Samples Relinquished By	Samples	Received By				ey and Definitions	: les by the laboratory.		
3/2/14/17	30	AUV	haulle	3/23@8	<u>:38</u>	Same day = Next day =	samples must l esults provided	be received by lab b I by end of next bus	before 2pm for same business day results siness day		
	1				1				ess day (e.g. received Mon., results by Wed.) ness day or sooner		
		acknowledges that he/she/it has read agrees to be bound thereby.	ad the terms a	and conditions	3	6-10 days =	results provide	ed by end of busine	ess day or sooner		

Lab Report Page 1 of 7 (312) RM 3/20/2015



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(800) 665-7586



NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

### Asbestos Laboratory Test Report

Customer: Frey Environmental, Inc.

Attention: John Payne

2817A Lafayette Avenue

Newport Beach, CA 92663

Job Location: Fashion Valley **Building West** 

Job #: 698-15

Amended	ке	port:	Point	Count*	

		Sub-sample		Sub-sample						
Sample #	W1-1	W1-1a	W1-2	W1-2a	W1-3	W2-1	W2-1.1	W3-1	W4-1	W5-1
1000-Point										
Count*										
Asbestos	No	No	No	No	No	No	No	No	No	Yes
Amount	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	7%
Туре										Chrysotile

Other

Amounts,

_			
T. 110	_	_	

Location	Building West	Building West	Building West	Building West	Building West	Building West	Building West	Building West	Building West	Building West
Material	Vinyl Composition Tile	Vinyl Tile Adhesive	Vinyl Composition Tile	Vinyl Tile Adhesive	Vinyl Composition Tile	Vinyl Base Cove	Vinyl Base Cove Adhesive	Ceiling Tile	Wallboard	Vinyl Composition Tile
Notes										
Color	White, Black	Amber	White, Black	Amber	White, Black	Beige	Off White	Gray, White	White	Beige
Homogeneous	No	No	No	No	No	No	No	Yes	Yes	No
Materials:										
Minerals	х	х	х	х	х	Х	х	х	х	х
Calcite	х		х		х	Х			х	х
Gypsum	Х		Х		Х	Х	Х		Х	Х
Mica									Х	
Perlite								Х		
Plastic	Х		Х		Х	Х				Х
Paint							White	White		
Tar										
Cellulose								40%	4%	
Fiberglass								10%	1%	
Synthetic Fib.										
Other 1		Soot / Soil				Rubber			Paper	
Other 2										
Other 3										
Method										
Departures	None	None	None	None	None	None	None	None	None	None

Analysts

Point Count:

Date: 03/24/2015 QC by: VT

Date: 3/30/2015 QC by: VT

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis.

Lab Report Page 2 of 7 (312) RM 3/20/2015



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(800) 665-7586



NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

### **Asbestos Laboratory Test Report**

Customer: Frey Environmental, Inc.

Attention: John Payne 2817A Lafayette Avenue

Newport Beach, CA 92663

Job Location: Fashion Valley Building West

Job #: 698-15

Sample # 1000-Point Count*										
	W5-1.1	W5-2	W5-2.1	W6-1	W6-2	W7-1	W7-1a	W7-2	W8-1	W9-1
Asbestos	Yes	Yes	Yes	No	No	No	No	No	No	No
Amount	3%	6%	4%	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Type	Chrysotile	Chrysotile	Chrysotile							

Other Amounts,

Amounts Types

rypes										
Location	Building West	Building West	Building West	Building West	Building West	Building West	Building West	Building West	Building West	Building West
Material	Vinyl Floor Mastic	Vinyl Composition Tile	Vinyl Floor Mastic	Vinyl Composition Tile	Vinyl Composition Tile	Vinyl Composition Tile	Adhesive	Vinyl Composition Tile	Adhesive	Vinyl Composition Tile
Notes										
Color	Black	Beige	Black	Beige	Beige	Light Brown	Tan	Light Brown	Tan, Gray	Gray
Homogeneous	No	No	No	Yes	No	No	No	Yes	No	Yes
Materials:										
Minerals	х	Х	х	х	х		х		х	х
Calcite		Х			Х	Х	Х	Х	Х	Х
Gypsum		Х								
Mica										
Perlite										
Plastic		Х				Х		Х		X
Paint										
Tar	Х		Х				<1			
Cellulose						<1%		<1%	4%	
Fiberglass						<1%		<1%		
Synthetic Fib. Other 1				String Backing	String Backing		Binder		Debris	
· · · · ·					· ·					
Other 2				Binder	Binder		Debris		Glass	
Other 3					Caulking					
Method Departures	None	None	None	None	None	None	None	None	None	None
Departures	INOTIC	INOTIC	INOTIC	INOTIC	INOTIC	INOTIC	INOLIG	INOTIC	INOTIC	INOTIC

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis.

Lab Report Page 3 of 7 (312) RM 3/20/2015



2211 West Orangewood Avenue Orange, CA 92868 Tel: (714) 937-0750 Fax: (714) 937-0755 www.envirocheck.com

(800) 665-7586



NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

### **Asbestos Laboratory Test Report**

Customer: Frey Environmental, Inc. Attention: John Payne

2817A Lafayette Avenue

Newport Beach, CA 92663

Job Location: Fashion Valley Building West

Job #: 698-15

	Newport Bea	ach, CA 92663	3							
Sample # 1000-Point Count*	W10-1	W10-2	W10-3	W11-1	W12-1	Sub-sample W12-1a	W12-2	Sub-sample W12-2a	W12-3	Sub-sample W12-3a
Asbestos	No	No	No	Yes	No	No	No	No	No	No
Amount	N.D.	N.D.	N.D.	3%	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Type				Chrysotile						
Other				0,00						-
Amounts, Types										
Location	Building West			Building West	Building West		Building West	Building West	Building West	Building West
Material	Ceiling Tile	Ceiling Tile	Ceiling Tile	Mastic	Vinyl Sheet Flooring	Vinyl Sheet Adhesive	Vinyl Sheet Flooring	Vinyl Sheet Adhesive	Vinyl Sheet Flooring	Vinyl Sheet Adhesive
Notes										
Color	White, Gray	White, Gray	White, Gray	Black	Off White, Beige, Gray	Amber	Gray, White	Gray, Ambert	White, Gray, Black	Gray, Amber
Homogeneous	Yes	Yes	Yes	No	No	No	No	No	No	No
Materials:										
Minerals	Х	х	х	х	х		х	х	х	Х
Calcite	<b></b> '	<u> </u>	<u> </u>	х	<b></b> '		х	х	х	Х
Gypsum	<b></b> '	<u> </u>	<b></b> '	<u> </u>	х	<u> </u> '	<b></b>	<b></b>		<u> </u>
Mica	<u> </u>	<b></b> '	<del> </del> '	<b></b> '	<b></b> '	<b></b> '	<b></b>	<b></b>	ļ	<b></b>
Perlite	Х	Х	Х	<u> </u>	<u> </u>	<u> </u> '	<del>                                     </del>	<del> </del>	ļ	<del> </del>
Plastic Paint	White	White	White	<del> </del>	Х	<del> </del>	Х	<del> </del>	Х	<del> </del>
Tar	VVIIIC	VVIIIC	VVIIIC	Х	<del>                                     </del>	<del> </del>	<del>                                     </del>	<del>                                     </del>	<del>                                     </del>	1
Cellulose	25%	25%	25%	<1%	<del> </del>	<del> </del>	<del> </del>	5%		3%
Fiberglass	25%	30%	30%	<del>                                     </del>	<del> </del>	<del>                                     </del>	1%	†	2%	
Synthetic Fib.		<del>                                     </del>	<del>                                     </del>	<del> </del>		<del>                                     </del>				
Other 1					Foam	Soot / Soil		Debris		Debris
Other 2		<del>                                     </del>	<del>                                     </del>			<del>                                     </del>		Binder		Binder
Other 3		<b>i</b>					1	1	1	
Method Departures	None	None	None	None	None	None	None	None	None	None

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis.

Lab Report Page 4 of 7 (312) RM 3/20/2015



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(800) 665-7586



NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

## **Asbestos Laboratory Test Report**

Customer: Frey Environmental, Inc. Attention: John Payne

2817A Lafayette Avenue

Newport Beach, CA 92663

Job Location: Fashion Valley Building West

Job #: 698-15

	Newport Bea	ich, CA 92663	3							
Sample # 1000-Point	W13-1	W13-2	W13-3	W14-1	W15-1	W16-1	W17-1	WR1-1 <b>0.3</b> %	Sub-sample WR1-1a	WR1-2
Count* Asbestos	Yes	Yes	Yes	Yes	No	No	No	Yes	No	Yes
Amount	7%	17%	1 <b>2</b> %	<b>3</b> %	N.D.	N.D.	N.D.	<1%	N.D.	<1%
Type	Chrysotile	Chrysotile	Chrysotile	Chrysotile	N.D.	N.D.	N.D.	Chrysotile	N.D.	Chrysotile
Other	Chrysotile	Chrysotile	Chrysotile	Chrysotile				Chrysotile		Chrysotile
Amounts, Types										
Location	Building West	Building West	Building West	Building West	Building West	Building West	Building West	Building West	Building West	Building West
Material	Insulation	Insulation	Insulation	Mastic	Vinyl Sheet Flooring	Adhesive	Concrete	Stucco	Stucco	Stucco
Notes										
Color	White	White	White	Black	White	Gray	Gray	Yellow	Gray	Yellow
Homogeneous	No	No	No	Yes	Yes	Yes	Yes	No	No	No
Materials:										
Minerals	Х	Х	х	х		Х	х	х	Х	Х
Calcite				Х						
Gypsum										
Mica						Х	х		Х	Х
Perlite										
Plastic Paint					Х			Off White		White
Tar				Х				On White		Willie
Cellulose	<1%	1%	<1%	^		<1%				
Fiberglass	20%	35%	30%							
Synthetic Fib.	15%		10%		3%					
Other 1	Diatomaceous Earth	Diatomaceous Earth	Diatomaceous Earth			Binder				
Other 2										
Other 3										
Method Departures	None	None	None	None	None	None	None	None	None	None

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis.

\*1000-Point Count not covered by NVLAP accreditation. \*\*Various sample locations combined for composite purposes. \*\*\*Not covered by NVLAP accreditation.

Lab Report Page 5 of 7 (312) RM 3/20/2015



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(800) 665-7586



NVLAP Lab Code: 200548-0 Sample Reception Date: 03/23/2015

## **Asbestos Laboratory Test Report**

Departures

None

None

None

None

Customer: Frey Environmental, Inc. Attention: John Payne

2817A Lafayette Avenue

Newport Beach, CA 92663

Job Location: Fashion Valley **Building West** Job #: 698-15

		Sub-sample							
Sample # 1000-Point Count*	WR1-3	WR1-3a	WR2-1	WR2-2	WR2-3				
Asbestos	Yes	No	No	No	No				
Amount	<1%	N.D.	N.D.	N.D.	N.D.				
Туре	Chrysotile								
Other Amounts, Types	•								
Location	Building West	Building West	Building West	Building West	Building West				
Material	Stucco	Stucco	Adhesive	Adhesive	Adhesive				
Notes									
Color	Yellow	Gray	Dark Gray, White	Brown	Brown				
Homogeneous	No	No	No	No	No				
Materials:									
Minerals	X	Х	Х	Х	Х				
Calcite			Х						
Gypsum									
Mica		Х							
Perlite									
Plastic	Off White								
Paint Tar	On write						_		-
Cellulose				15%	2%				
Fiberglass				1070	270				-
Synthetic Fib.									
Other 1			Binder	Binder	Binder				
Other 2			Debris				+		
Other 3									
Method						<u> </u>		<u> </u>	

Samples were analyzed by the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA-600/M4-82-020, and EPA/600/R-93/116. The limit of detection for asbestos is <1% by weight, and the limit of quantification is 1.0% or greater by weight. The State of California defines an asbestos-containing construction material as having more than 0.1% asbestos by weight. All samples are disposed of within 30 days unless the customer requests otherwise. This report shall not be reproduced except in full, without the written approval of the laboratory. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. Test results relate only to the items tested. Samples having no asbestos detected by PLM may test positive by TEM analysis.

None

\*1000-Point Count not covered by NVLAP accreditation. \*\*Various sample locations combined for composite purposes. \*\*\*Not covered by NVLAP accreditation.

E	ENV	IROC	HE	CK, INC		Cha	in of C	ustod	<u> </u>		(Pa. 10×2)
P	range, C h. (800) 6	rangewood A 92868 665-7586 • rochecking	Fax: (714	937-0755		Date Sam Sampled P.O. #:	7	16/15 JOHN 1	mne		Please see Key below  Same day  Next day
(	Client: #	THEY	Envis	conments.	tne.	Project Na	me: 5	aghio	· Valle	en	□6-10 days □ Other:
		Name:		V Payre		Contact:		-	Bldg.	W	Daniel Daniel I
A	Address:	2917	A UNITE	gyette Ane	2.	Address:			0		Procedure Requested Non-viable Mold
(	City, State	e, Zip: N	onpor	+ Begch,	ca 92663	City, State	, Zip:				☐ Air ☐ Bulk
	Ph:					Additional	Info:		-		☐ Tape Lifts ☐ Surface Swabs
F	ax:				w = _ s		W. Carlotte				☐ Viable Mold
	ID	Lab ID		Location	Material	Sq/FT	Time On	Time Off	LPM	Media	☐ Air ☐ Bulk ☐ Surface Swabs
4,5 M	11-1,23 12-1, W21- 13-1 14-1	2081 - 2083 1 2084, 20 2086 2087	BU11 185	Ding-Wess							□ Bacteria □ Air □ Bulk □ Swab □ Sewage Screen □ Gram-staining □ Counts only
2-13 h	15-1,2	W 5-1.1, W!	3	2088 - 2091)							Asbestos Bulk EPA 600-93/116
16 V		2096	5								☐ Asbestos PCM (Air) NIOSH 7400
8-20 in 21 in	510-1,23 511-1 512-1,23	2098-2100									☐ <b>Lead</b> ☐ Paint chips ☐ Wipes ☐ Air ☐ Soil ☐ Other:
28 i		2102-2104 2105-2107 2108 2109		/							Other
3	*By signing	above, Client	acknowledg	elinquished By  ges that he/she/it has as to be bound thereby	Lokers Lokers	The second secon	3:38 11:24am	T.A.T. starts up  Same day =  Next day =  2 days = res  3-5 days =	on receipt and a samples must be results provided sults provided be results provided	be received by lab ld d by end of next but	oles by the laboratory.  Defore 2pm for same business day results siness day  ess day (e.g. received Mon., results by Wed.)  ness day or sooner

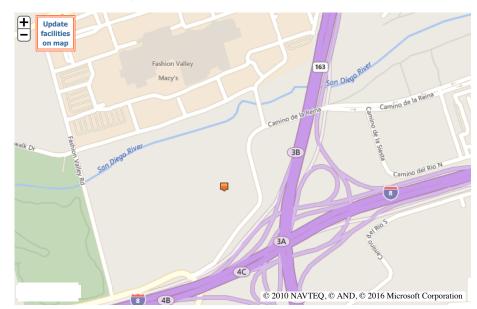
ENVIR	DCHE	CK, INC.		Cha	n of C	ustody	_		P3. 2 OF 2
2211 W. Orange Orange, CA 928 Ph. (800) 665-75 www.enviroche	wood Ave. 68 86 • Fax: (7			Date Sam Sampled		16/15 Ohn V	Pogn		Turnaround Time (T.A.T Please see Key below
		- utol	—	Project Na	77-1	15.016	Mar		□2 days
			Inc.	Contact:	ile.	MONTH 1	2/2	(W)	□6-10 days □ Other:
		V. Syne		-197	7		- End	7	<b>Procedure Requeste</b>
City, State, Zip	Newpor	of Bipil, 14	92663	Address: City, State,	Zip:				Non-viable Mold  ☐ Air ☐ Bulk ☐ Tape Lifts
Ph: (949)-	723-160	15		Additional	Info:				☐ Surface Swabs
Fax:									□ Viable Mold
ID Lat		Location	Material	Sq/FT	Time On	Time Off	LPM	Media	☐ Air ☐ Bulk ☐ Surface Swabs
W17-1 211		ipmy-west							□ Bacteria □ Air □ Bulk □ Swa □ Sewage Screen □ Gram-staining □ Counts only
WR1-12,3 2112 WRZ-1,2,3 2115	2114								Asbestos Bulk EPA 600-93/116
,									□ Asbestos PCM (Air) NIOSH 7400
									□ Lead □ Paint chips □ Wipes □ A □ Soil □ Other:
									□ Other
Date Time 3/2/15 11:83	*Samples	Relinguished By		3/23@8 -E/ 3.23.15	:38	T.A.T. starts up	on receipt and samples must results provided	be received by lab be d by end of next bus	les by the laboratory. sefore 2pm for same business day results



## Envirofacts Search Results

#### Search Results for:

123 Camino de la reina, San Diego, CA 92108

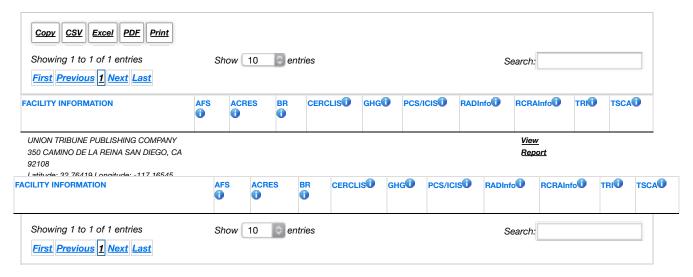


Envirofacts Links

EF Overview
Search
Model
Data Update
Multisystem Search User Guide
Contact Us

The facility list below is based upon the facilities that are visible with the map above. To refine your search to a more targeted area of interest, please visit the <a href="Envirofacts Multisystem Search Form">Envirofacts Via an interactive map</a>, please view your results in <a href="Envirofacts">Envirofacts</a>

## List of EPA-Regulated Facilities in Envirofacts



Total Number of Facilities Displayed: 1

Return to more topical information



# Envirofacts Search Results



Data Disclaimer

**RCRAInfo Facility Information** 

<< Return

### THE SAN DIEGO UNION TRIBUNE LLC

Handler ID: CAD981449556 350 CAMINO DE LA REINA SAN DIEGO, CA 92108

County Name: SAN DIEGO

**Latitude:** 32.76419 **Longitude:** -117.16545

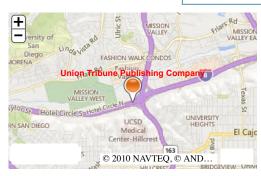
Hazardous Waste Generator: Small Quantity Generator

Owner Name: THE SAN DIEGO UNION TRIBUNE LLC

#### RCRAInfo Links

- Overview
- SearchModel
- Model
- RCRAInfo Search User Guide
- Contact Us
- Office of Resource Conservation and Recovery Home

Report an Erro



\*You can navigate within the map with your mouse.

## No BIENNIAL REPORT data is available for the facility listed above.

### LIST OF FACILITY CONTACTS

<u>NAME</u>	<u>STREET</u>	CITY	STATE	ZIP CODE	PHONE	TYPE OF CONTACT
DAVID FERGUSON	350 CAMINO DE LA REINA	SAN DIEGO	CA	92108	619-293-1144	Public
ENVIRONMENTAL MANAGER	350 CAMINO DE LA REINA	SAN DIEGO	CA	92108	6192931492	Permit
JOHN P SCANLON					6192931144	Permit
DAVID FERGUSON	350 CAMINO DE LA REINA	SAN DIEGO	CA	92108	619-293-1144	Permit

## HANDLER / FACILITY CLASSIFICATION

Unspecified Universe for the facility listed above.

HANDLER TYPE
Small Quantity Generator

No PROCESS INFORMATION is available for the facility listed above.

### LIST OF NAICS CODES AND DESCRIPTIONS

NAICS CODE	NAICS DESCRIPTION
51111	NEWSPAPER PUBLISHERS
23711	WATER AND SEWER LINE AND RELATED STRUCTURES CONSTRUCTION

## LIST OF WASTE CODES AND DESCRIPTIONS

WASTE CODE	WASTE DESCRIPTION
D001	IGNITABLE WASTE

Go To Top Of The Page

Total Number of Facilities Retrieved: 1

Last updated on 2016-07-28

## UNION TRIBUNE PUBLISHING CO (T0607302276) - (MAP)

SIGN UP FOR EMAIL ALERTS

350 CAMINO DE LA REINA SAN DIEGO, CA 921083003 SAN DIEGO COUNTY LUST CLEANUP SITE PRINTABLE CASE SUMMARY / CSM REPORT CLEANUP OVERSIGHT AGENCIES

SAN DIEGO COUNTY LOP (LEAD) - CASE #: H00174-003 SAN DIEGO RWQCB (REGION 9) - CASE #: 9UT3509

Regulatory Profile

**CLEANUP STATUS - DEFINITIONS** 

COMPLETED - CASE CLOSED AS OF 4/9/2008 - CLEANUP STATUS HISTORY

POTENTIAL CONTAMINANTS OF CONCERN

DIESEL

**FILE LOCATION** 

LOCAL AGENCY

POTENTIAL MEDIA OF CONCERN

SOIL

**BENEFICIAL USE** 

GW - MUNICIPAL AND DOMESTIC SUPPLY, SW -

AGRICULTURAL SUPPLY, SW - COLD FRESHWATER HABITAT, SW - INDUSTRIAL

PROCESS SUPPLY, SW - INDUSTRIAL SERVICE

SUPPLY, SW - NON-CONTACT WATER

RECREATION, SW - RARE, THREATENED, OR

ENDANGERED SPECIES, SW - WARM

FRESHWATER HABITAT, SW - WATER CONTACT

RECREATION, SW - WILDLIFE HABITAT

**DWR GROUNDWATER SUB-BASIN NAME** 

Mission Valley (9-14)

**RB WATERSHED NAME** 

San Diego - Lower San Diego - Mission San Diego

(907.11)

Site History

No site history available

## UNION TRIBUNE PUBLISHING CO (T0607302895) - (MAP)

SIGN UP FOR EMAIL ALERTS

350 CAMINO DE LA REINA SAN DIEGO, CA 921083003 SAN DIEGO COUNTY LUST CLEANUP SITE PRINTABLE CASE SUMMARY / CSM REPORT

SAN DIEGO COUNTY LOP (LEAD) - CASE #: H00174-001 SAN DIEGO RWQCB (REGION 9) - CASE #: 9UT614

CUF Claim #:

2509

CUF Priority Assigned:

**CLEANUP OVERSIGHT AGENCIES** 

\$831,483

CUF Amount Paid:

Regu	latory	Profile
------	--------	---------

**CLEANUP STATUS - DEFINITIONS** 

COMPLETED - CASE CLOSED AS OF 12/8/1997 - CLEANUP STATUS HISTORY

POTENTIAL CONTAMINANTS OF CONCERN

NONE SPECIFIED

**FILE LOCATION** 

LOCAL AGENCY

**DWR GROUNDWATER SUB-BASIN NAME** 

Mission Valley (9-14)

**POTENTIAL MEDIA OF CONCERN** 

NONE SPECIFIED

**BENEFICIAL USE** 

NONE SPECIFIED

**RB WATERSHED NAME** 

San Diego - Lower San Diego - Mission San Diego

(907.11)

Site History			
No site history availa	ıble		

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## UNION TRIBUNE PUBLISHING CO (T0608194797) - (MAP)

**SIGN UP FOR EMAIL ALERTS** 

350 CAMINO DE LA REINA SAN DIEGO, CA 921083003 SAN DIEGO COUNTY LUST CLEANUP SITE PRINTABLE CASE SUMMARY / CSM REPORT <u>CLEANUP OVERSIGHT AGENCIES</u>
SAN DIEGO COUNTY LOP (*LEAD*) - CASE #: H00174-002
SAN DIEGO RWQCB (REGION 9)

Regulatory Profile

**CLEANUP STATUS - DEFINITIONS** 

COMPLETED - CASE CLOSED AS OF 4/18/2008 - CLEANUP STATUS HISTORY

POTENTIAL CONTAMINANTS OF CONCERN

WASTE OIL / MOTOR / HYDRAULIC /

**LUBRICATING** 

**FILE LOCATION** 

LOCAL AGENCY

POTENTIAL MEDIA OF CONCERN

SOIL

**BENEFICIAL USE** 

GW - MUNICIPAL AND DOMESTIC SUPPLY, SW -

AGRICULTURAL SUPPLY, SW - COLD

FRESHWATER HABITAT, SW - INDUSTRIAL

PROCESS SUPPLY, SW - INDUSTRIAL SERVICE

SUPPLY, SW - NON-CONTACT WATER

RECREATION, SW - RARE, THREATENED, OR

**ENDANGERED SPECIES, SW - WARM** 

FRESHWATER HABITAT, SW - WATER CONTACT

RECREATION, SW - WILDLIFE HABITAT

**DWR GROUNDWATER SUB-BASIN NAME** 

Mission Valley (9-14)

**RB WATERSHED NAME** 

San Diego - Lower San Diego - Mission San Diego

(907.11)

Site History

No site history available

## UNION TRIBUNE BUILDING SITE (T10000009023) - (MAP)

SIGN UP FOR EMAIL ALERTS

350 CAMINO DE LA REINA SAN DIEGO, CA 92108 SAN DIEGO COUNTY CLEANUP PROGRAM SITE PRINTABLE CASE SUMMARY / CSM REPORT **CLEANUP OVERSIGHT AGENCIES** 

SAN DIEGO COUNTY LOP (LEAD) - CASE #: DEH2016-LSAM-000377
CASEWORKER: JAMES CLAY

SAN DIEGO RWQCB (REGION 9)

Regulatory Profile

**CLEANUP STATUS - DEFINITIONS** 

COMPLETED - CASE CLOSED AS OF 7/26/2016 - CLEANUP STATUS HISTORY

POTENTIAL CONTAMINANTS OF CONCERN

NONE SPECIFIED

**FILE LOCATION** 

**POTENTIAL MEDIA OF CONCERN** 

NONE SPECIFIED

**BENEFICIAL USE** 

NONE SPECIFIED

**DWR GROUNDWATER SUB-BASIN NAME** 

Mission Valley (9-14)

**RB WATERSHED NAME** 

San Diego - Lower San Diego - Mission San Diego

(907.11)

Site History

Comments:

The property is located at 350 Camino de la Reina (Site) in San Diego, California. The Site is an irregularly-shaped parcel, totaling approximately 13 acres of land. The site is currently developed with three commercial buildings and surface parking areas historically used by the San Diego Union Tribune. The buildings on Site are a five-story office building with a sub-grade parking level, a three-story building formerly used for production, but currently identified as an office building, and a single-story vehicle maintenance garage.

In 1986, during the removal of four USTs (two 10,000- gallon diesel, one 12,000-gallon gasoline and one 2,000-gallon motor oil), benzene and total petroleum hydrocarbons (TPH) were encountered in soil and groundwater at the Site and Local Oversight Program case H00174-001 was opened. On December 8, 1997, a closure letter (H00174-001) was issued by the DEH for case H00174-001. Benzene was detected in groundwater at a concentration of 19 micrograms per liter (ig/l) at this time. In February 1996, a 550-gallon diesel UST and a 280-gallon waste-oil UST were reportedly removed from the Site. Petroleum hydrocarbon-impacted soil was reportedly detected in the immediate area of the USTs. Following the removal of the UST and export of impacted soil, fourteen confirmation soil samples were collected and analyzed with no detectable levels of petroleum hydrocarbons. On April 18, 2008, the DEH issued a closure level for case H00174-002. In 1997, diesel fuel was reportedly detected in soil during an upgrade to the piping system near the fuel dispensing islands; however, the contamination was determined to be related to the former release from 1986. The DEH issued a closure letter for case H00174-002 on April 9, 2008.

On March 18, 2016, the area beneath a previously removed clarifier was sampled.

On April 27, 2016, ten additional confirmation soil samples were collected from the areas beneath the previously removed clarifier and wash-out.

	11
On April 28, 2016, soil sampling was conducted after the removal of four hydraulic lifts on site. The hy were encased in concrete. Confirmation samples were collected by breaking through the base of the vault and subsampling the soil immediately adjacent to the base of the vault.	
On May 17, 2016, additional soil samples were collected adjacent to each of the lifts in an effort to ide lateral and vertical extent of contamination.	entify the
On July 1, 2016, two Hydropunch groundwater samples were collected from the locations with the hig detected concentrations of diesel in soil (North West Lift and South East Lift). Analysis of the chromate from the groundwater samples and the presence of BTEX components in the groundwater indicate the groundwater contamination consists mainly of gasoline and weathered gasoline. These results do not presence of a significant amount of hydraulic fluid. It was concluded that the contamination present in groundwater beneath the Site was predominantly from the prior UST release(s) and did not originate the hydraulic lifts, clarifier, or wash-out. The TPH and VOC constituents detected in the groundwater are the contaminants previously reported in the closure summary of case #H00174-001. Therefore, it was contadditional assessment is not warranted and that DEH Case #DEH2016-LSAM-00377 should be close DEH concurs with this conclusion. If, in the future, the maintenance building is demolished and the sudisturbed in the area of the impacted soil, DEH requests that you enter the Voluntary Assistance Prog document that impacted soil is properly characterized and disposed.	ographs at the t indicate the the from the the same ncluded that ed.

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- ✓ The Checklist is required only for projects subject to CEQA review.<sup>2</sup>
- ✓ If required, the Checklist must be included in the project submittal package. Application submittal procedures can be found in <a href="Chapter 11: Land Development Procedures">Chapter 11: Land Development Procedures</a> of the City's Municipal Code.
- ✓ The requirements in the Checklist will be included in the project's conditions of approval.
- ✓ The applicant must provide an explanation of how the proposed project will implement the requirements described herein to the satisfaction of the Planning Department.

	Application Ir	nformation	
Contact Information	n		
Project No./Name:	474586 / Alexan Fashion Valley		
Property Address:	123 Camino de la Reina		
Applicant Name/Co.:	: Alec Schiffer / Maple Multi-Family La	nd CA, L.P.	
Contact Phone:	858.210.9737	Contact Email:	aschiffer@tcr.com
Was a consultant ret	tained to complete this checklist?  Karen L. Ruggels	☑ Yes ☐ No Contact Phone:	If Yes, complete the following 619.578.9505
Company Name:	KLR PLANNING	Contact Email:	karen@klrplanning.com
Project Information	n		
1. What is the size o	f the project (acres)?	4.92 acres	
2. Identify all applica	able proposed land uses:		
☐ Residentia	al (indicate # of single-family units):	236 Apartment Units	s + 48 Residential-Work Units for a total of
✓ Residentia	al (indicate # of multi-family units):	284 rental units	
☑ Commerci	ial (total square footage):	11,295 square fe	eet of office and restaurant space
☐ Industrial	(total square footage):		
☐ Other (des	scribe):		
3. Is the project loca	ited in a Transit Priority Area?	☑ Yes □ No	
4. Provide a brief description of the project proposed:		See Attachment A	۹.

<sup>&</sup>lt;sup>2</sup> Certain projects seeking ministerial approval may be required to complete the Checklist. For example, projects in a Community Plan Implementation Overlay Zone may be required to use the Checklist to qualify for ministerial level review. See Supplemental Development Regulations in the project's community plan to determine applicability.



## **CAP CONSISTENCY CHECKLIST QUESTIONS**

## Step 1: Land Use Consistency

The first step in determining CAP consistency for discretionary development projects is to assess the project's consistency with the growth projections used in the development of the CAP. This section allows the City to determine a project's consistency with the land use assumptions used in the CAP.

	Step 1: Land Use Consistency						
Checklis (Check t	st Item the appropriate box and provide explanation and supporting documentation for your answer)	Yes	No				
1.	Is the proposed project consistent with the existing General Plan and Community Plan land use and zoning designations?, $\frac{OR}{C}$ ,						
2.	If the proposed project is not consistent with the existing land use plan and zoning designations, does the project include a land use plan and/or zoning designation amendment that would result in an equivalent or less GHG-intensive project when compared to the existing designations?; <u>OR</u> ,	☑					
3.	If the proposed project is not consistent with the existing land use plan and zoning designations, and includes a land use plan and/or zoning designation amendment that would result in an increase in GHG emissions when compared to the existing designations, would the project be located in a Transit Priority Area (TPA) and implement CAP Strategy 3 actions, as determined in Step 3 to the satisfaction of the Development Services Department?						

If "Yes," proceed to Step 2 of the Checklist. For questions 2 and 3 above, provide estimated project emissions under both existing and proposed designation(s) for comparison. For question 3 above, complete Step 3.

If "No," in accordance with the City's Significance Determination Thresholds, the project's GHG impact is significant. The project must nonetheless incorporate each of the measures identified in Step 2 to mitigate cumulative GHG emissions impacts unless the decision maker finds that a measure is infeasible in accordance with CEQA Guidelines Section 15091. Proceed and complete Step 2 of the Checklist.

<sup>&</sup>lt;sup>3</sup> This question may also be answered in the affirmative if the project is consistent with SANDAG Series 12 growth projections, which were used to determine the CAP projections, as determined by the Planning Department.

## Step 2: CAP Strategies Consistency

The second step of the CAP consistency review is to review and evaluate a project's consistency with the applicable strategies and actions of the CAP. Step 2 only applies to development projects that involve permits that would require a certificate of occupancy from the Building Official or projects comprised of one and two family dwellings or townhouses as defined in the California Residential Code and their accessory structures. All other development projects that would not require a certificate of occupancy from the Building Official shall implement Best Management Practices for construction activities as set forth in the Greenbook (for public projects).

Step 2: CAP Strategies Consistency				
Checklist Item (Check the appropriate box and provide explanation for your answer)	Yes	No	N/A	
Strategy 1: Energy & Water Efficient Buildings				
<ul> <li>1. Cool/Green Roofs.</li> <li>Would the project include roofing materials with a minimum 3-year aged solar reflection and thermal emittance or solar reflection index equal to or greater than the values specified in the voluntary measures under California Green Building Standards Code (Attachment A)?; OR</li> <li>Would the project roof construction have a thermal mass over the roof membrane, including areas of vegetated (green) roofs, weighing at least 25 pounds per square foot as specified in the voluntary measures under California Green Building Standards Code?; OR</li> <li>Would the project include a combination of the above two options?</li> <li>Check "N/A" only if the project does not include a roof component.</li> </ul>	Ø			
<ul> <li>2. Plumbing fixtures and fittings</li> <li>With respect to plumbing fixtures or fittings provided as part of the project, would those low-flow fixtures/appliances be consistent with each of the following:</li> <li>Residential buildings: <ul> <li>Kitchen faucets: maximum flow rate not to exceed 1.5 gallons per minute at 60 psi;</li> <li>Standard dishwashers: 4.25 gallons per cycle;</li> <li>Compact dishwashers: 3.5 gallons per cycle; and</li> <li>Clothes washers: water factor of 6 gallons per cubic feet of drum capacity?</li> </ul> </li> <li>Nonresidential buildings: <ul> <li>Plumbing fixtures and fittings that do not exceed the maximum flow rate specified in Table A5.303.2.3.1 (voluntary measures) of the California Green Building Standards Code (See Attachment A); and</li> <li>Appliances and fixtures for commercial applications that meet the provisions of Section A5.303.3 (voluntary measures) of the California Green Building Standards Code (See Attachment A)?</li> </ul> </li> <li>Check "N/A" only if the project does not include any plumbing fixtures or fittings.</li> </ul>	Ø			

Actions that are not subject to Step 2 would include, for example: 1) discretionary map actions that do not propose specific development, 2) permits allowing wireless communication facilities, 3) special events permits, 4) use permits that do not result in the expansion or enlargement of a building, and 5) non-building infrastructure projects such as roads and pipelines. Because such actions would not result in new occupancy buildings from which GHG emissions reductions could be achieved, the items contained in Step 2 would not be applicable.

Step 2: CAP Strategies Consistency	,		
Checklist Item (Check the appropriate box and provide explanation for your answer)	Yes	No	N/A
Strategy 2: Clean & Renewable Energy			
<ul> <li>Is the project designed to have an energy budget that meets the following performance standards when compared to the Title 24, Part 6 Energy Budget for the Proposed Design Building as calculated by Compliance Software certified by the California Energy Commission (percent improvement over current code):         <ul> <li>Low-rise residential – 15% improvement?</li> <li>Nonresidential with indoor lighting OR mechanical systems, but not both – 5% improvement?</li> <li>Nonresidential with both indoor lighting AND mechanical systems – 10% improvement?<sup>5</sup></li> </ul> </li> <li>The demand reduction may be provided through on-site renewable energy generation, such as solar, or by designing the project to have an energy budget that meets the above-mentioned performance standards, when compared to the Title 24, Part 6 Energy Budget for the Proposed Design Building (percent improvement over current code).</li> <li>Note: For Energy Budget calculations, high-rise residential and hotel/motel buildings are considered non-residential buildings.</li> <li>Check "N/A" only if the project does not contain any residential or non-residential buildings.</li> </ul>	Z		
Strategy 3: Bicycling, Walking, Transit & Land Use			
<ul> <li>Single-family projects: Would the required parking serving each new single-family residence and each unit of a duplex be constructed with a listed cabinet, box or enclosure connected to a raceway linking the required parking space to the electrical service, to allow for the future installation of electric vehicle supply equipment to provide an electric vehicle charging station for use by the resident?</li> <li>Multiple-family projects of 10 dwelling units or less: Would 3% of the total parking spaces required, or a minimum of one space, be provided with a listed cabinet, box or enclosure connected to a conduit linking the parking spaces with the electrical service, in a manner approved by the building and safety official, to allow for the future installation of electric vehicle supply equipment to provide electric vehicle charging stations at such time as it is needed for use by residents?</li> <li>Multiple-family projects of more than 10 dwelling units: Would 3% of the total parking spaces required, or a minimum of one space, be provided with a listed cabinet, box or enclosure connected to a conduit linking the parking spaces with the electrical service, in a manner approved by the building and safety official? Of the total listed cabinets, boxes or enclosures provided, would 50% have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use by residents?</li> </ul>	V		

<sup>&</sup>lt;sup>5</sup> CALGreen defines mechanical systems as equipment, appliances, fixtures, fittings and/or appurtenances, including ventilating, heating, cooling, air-conditioning and refrigeration systems, incinerators and other energy-related systems.

Step 2: CAP Strategies Consistency							
Checklist Item (Check the appropriate box and provide explanation for your answer)				Yes	No	N/A	
<ul> <li>Non-residential projects: If the project includes new commercial, industrial, or other uses with the building or land area, capacity, or numbers of employees listed in Attachment A, would 3% of the total parking spaces required, or a minimum of one space, be provided with a listed cabinet, box or enclosure connected to a conduit linking the parking spaces with the electrical service, in a manner approved by the building and safety official? Of the total listed cabinets, boxes or enclosures provided, would 50% have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use?</li> <li>Check "N/A" only if the project is does not include new commercial, industrial, or other uses with the building or land area, capacity, or numbers of employees listed in Attachment A.</li> </ul>							
Strategy 3: E	<b>Bicycling, Walking,</b> mplete this section if	Transit & Land Use project includes non-	residential or mixed us	ses)			
5. Bicycle Parking Spaces  Would the project provide more short- and long-term bicycle parking spaces than required in the City's Municipal Code (Chapter 14, Article 2, Division 5)? <sup>6</sup>			V				
Check "N/A" only if the project is a residential project.  6. Shower facilities  If the project includes nonresidential development that would accommodate over 10 tenant occupants (employees), would the project include changing/shower							
		the voluntary measur shown in the table be	es under the <u>California</u> low?	a Green			
	Number of Tenant Occupants (Employees)	Shower/Changing Facilities Required	Two-Tier (12" X 15" X 72") Personal Effects Lockers Required				
	0-10	0	0				
	11-50	1 shower stall	2		abla		
	51-100	1 shower stall	3				
	101-200	1 shower stall	4				
	Over 200	1 shower stall plus 1 additional shower stall for each 200 additional tenant-occupants	1 two-tier locker plus 1 two-tier locker for each 50 additional tenant- occupants				
Check "N/A" only if the project is a residential project, or if it does not include nonresidential development that would accommodate over 10 tenant occupants (employees).							

 $<sup>^{6}</sup>$  Non-portable bicycle corrals within 600 feet of project frontage can be counted towards the project's bicycle parking requirements.

		Step 2: CAP Strategies	Consistency	,		
Charldist Itan	_	Step 2. CAI Strategies	Consistency			
Checklist Iten (Check the ap	ppropriate box and provide ex	planation for your answer)		Yes	No	N/A
7. Designa	ted Parking Spaces					
designa	If the project includes an employment use in a TPA, would the project provide designated parking for a combination of low-emitting, fuel-efficient, and carpool/vanpool vehicles in accordance with the following table?					
	Number of Required Parking Spaces	Number of Designated Parking Spaces				
	0-9	0				
	10-25	2				
	26-50	4				
	51-75	6				
	76-100	9		Ø		
	101-150	11				
	151-200	18				
	201 and over	At least 10% of total				
not in a	ddition to it.	thin the overall minimum parkin				
8. Transportation Demand Management Program						
include	If the project would accommodate over 50 tenant-occupants (employees), would it include a transportation demand management program that would be applicable to existing tenants and future tenants that includes:					
At least	one of the following compone	ents:				
• Pa	arking cash out program					
si	<ul> <li>Parking management plan that includes charging employees market-rate for single-occupancy vehicle parking and providing reserved, discounted, or free spaces for registered carpools or vanpools</li> </ul>					
<ul> <li>Unbundled parking whereby parking spaces would be leased or sold separately from the rental or purchase fees for the development for the life of the development</li> </ul>			☑			
And at least three of the following components:						
<ul> <li>Commitment to maintaining an employer network in the SANDAG iCommute program and promoting its RideMatcher service to tenants/employees</li> </ul>						
On-site carsharing vehicle(s) or bikesharing						
Flexible or alternative work hours						
Telework program						
• Tr	ransit, carpool, and vanpool su	ıbsidies				

Step 2: CAP Strategies Consistency				
Checklist Item (Check the appropriate box and provide explanation for your answer)	Yes	No	N/A	
<ul> <li>Pre-tax deduction for transit or vanpool fares and bicycle commute costs</li> <li>Access to services that reduce the need to drive, such as cafes, commercial stores, banks, post offices, restaurants, gyms, or childcare, either onsite or within 1,320 feet (1/4 mile) of the structure/use?</li> </ul>				
Check "N/A" only if the project is a residential project or if it would not accommodate over 50 tenant-occupants (employees).				

## Step 3: Project CAP Conformance Evaluation (if applicable)

No applicable.

The third step of the CAP consistency review only applies if Step 1 is answered in the affirmative under option 3. The purpose of this step is to determine whether a project that is located in a TPA but that includes a land use plan and/or zoning designation amendment that would result in an increase in GHG emissions when compared to the existing designations, is nevertheless consistent with the assumptions in the CAP because it would implement CAP Strategy 3 actions. The following questions must each be answered in the affirmative and fully explained.

# 1. Would the proposed project implement the General Plan's City of Villages strategy in an identified Transit Priority Area (TPA) that will result in an increase in the capacity for transit-supportive residential and/or employment densities?

Considerations for this question:

- Does the proposed land use and zoning designation associated with the project provide capacity for transit-supportive residential densities within the TPA?
- Is the project site suitable to accommodate mixed-use village development, as defined in the General Plan, within the TPA?
- Does the land use and zoning associated with the project increase the capacity for transit-supportive employment intensities within the TPA?

## 2. Would the proposed project implement the General Plan's Mobility Element in Transit Priority Areas to increase the use of transit? Considerations for this question:

- Does the proposed project support/incorporate identified transit routes and stops/stations?
- Does the project include transit priority measures?

# 3. Would the proposed project implement pedestrian improvements in Transit Priority Areas to increase walking opportunities? <u>Considerations for this question:</u>

- Does the proposed project circulation system provide multiple and direct pedestrian connections and accessibility to local activity centers (such as transit stations, schools, shopping centers, and libraries)?
- Does the proposed project urban design include features for walkability to promote a transit supportive environment?

# 4. Would the proposed project implement the City of San Diego's Bicycle Master Plan to increase bicycling opportunities? Considerations for this guestion:

- Does the proposed project circulation system include bicycle improvements consistent with the Bicycle Master Plan?
- Does the overall project circulation system provide a balanced, multimodal, "complete streets" approach to accommodate mobility needs of all users?

## 5. Would the proposed project incorporate implementation mechanisms that support Transit Oriented Development? Considerations for this guestion:

- Does the proposed project include new or expanded urban public spaces such as plazas, pocket parks, or urban greens in the TPA?
- Does the land use and zoning associated with the proposed project increase the potential for jobs within the TPA?
- Do the zoning/implementing regulations associated with the proposed project support the efficient use of parking through mechanisms such as: shared parking, parking districts, unbundled parking, reduced parking, paid or time-limited parking, etc.?

## 6. Would the proposed project implement the Urban Forest Management Plan to increase urban tree canopy coverage? Considerations for this question:

- Does the proposed project provide at least three different species for the primary, secondary and accent trees in order to accommodate varying parkway widths?
- Does the proposed project include policies or strategies for preserving existing trees?
- Does the proposed project incorporate tree planting that will contribute to the City's 20% urban canopy tree coverage goal?



This attachment provides performance standards for applicable Climate Action Pan (CAP) Consistency Checklist measures.

Table 1 Roof Design Values for Question 1: Cool/Green Roofs supporting Strategy 1: Energy & Water Efficient Buildings of the Climate Action Plan					
Land Use Type	Roof Slope	Minimum 3-Year Aged Solar Reflectance	Thermal Emittance	Solar Reflective Index	
Low Dica Decidential	≤2:12	0.55	0.75	64	
Low-Rise Residential	> 2:12	0.20	0.75	16	
High-Rise Residential Buildings,	≤2:12	0.55	0.75	64	
Hotels and Motels	> 2:12	0.20	0.75	16	
Non-Residential	≤2:12	0.55	0.75	64	
	> 2:12	0.20	0.75	16	

Source: Adapted from the California Green Building Standards Code (CALGreen) Tier 1 residential and non-residential voluntary measures shown in Tables A4.106.5.1 and A5.106.11.2.2, respectively. Roof installation and verification shall occur in accordance with the CALGreen Code.

CALGreen does not include recommended values for low-rise residential buildings with roof slopes of  $\leq$  2:12 for San Diego's climate zones (7 and 10). Therefore, the values for climate zone 15 that covers Imperial County are adapted here.

Solar Reflectance Index (SRI) equal to or greater than the values specified in this table may be used as an alternative to compliance with the aged solar reflectance values and thermal emittance.

Table 2	able 2 Fixture Flow Rates for Non-Residential Buildings related to Question 2: Plumbing Fixtures and Fittings supporting Strategy 1: Energy & Water Efficient Buildings of the Climate Action Plan			
	Fixture Type	Maximum Flow Rate		
	Showerheads	1.8 gpm @ 80 psi		
	Lavatory Faucets	0.35 gpm @60 psi		
	Kitchen Faucets	1.6 gpm @ 60 psi		
Wash Fountains		1.6 [rim space(in.)/20 gpm @ 60 psi]		
Metering Faucets		0.18 gallons/cycle		
Metering Faucets for Wash Fountains		0.18 [rim space(in.)/20 gpm @ 60 psi]		
Gravity Tank-type Water Closets		1.12 gallons/flush		
Flushometer Tank Water Closets		1.12 gallons/flush		
Flushometer Valve Water Closets		1.12 gallons/flush		
	Electromechanical Hydraulic Water Closets	1.12 gallons/flush		
Urinals		0.5 gallons/flush		

Source: Adapted from the <u>California Green Building Standards Code</u> (CALGreen) Tier 1 non-residential voluntary measures shown in Tables A5.303.2.3.1 and A5.106.11.2.2, respectively. See the <u>California Plumbing Code</u> for definitions of each fixture type.

Where complying faucets are unavailable, aerators rated at 0.35 gpm or other means may be used to achieve reduction.

Acronyms: gpm = gallons per minute psi = pounds per square inch (unit of pressure)

in. = inch

Table 3 Standards for Appliances and Fixtures for Commercial Application related to Question 2: Plumbing Fixtures and Fittings supporting Strategy 1: Energy & Water Efficient Buildings of the Climate Action Plan				
Appliance/Fixture Type	Appliance/Fixture Type Standard			
Clothes Washers	Maximum Water Factor  (WF) that will reduce the use of water by 10 percent below the California Energy Commissions' WF standards for commercial clothes washers located in Title 20 of the California Code of Regulations.			
Conveyor-type Dishwashers	0.70 maximum gallons per rack (2.6 L) (High-Temperature)  0.62 maximum gallons per rack L) (Chemical)			
Door-type Dishwashers	0.95 maximum gallons per rack (3.6 L) (High-Temperature)  1.16 maximum gallons p L) (Chemical)			
Undercounter-type Dishwashers	0.90 maximum gallons per rack (3.4 L) (High-Temperature)  0.98 maximum gallons per rack (1.4 L) (Chemical)			
Combination Ovens	Consume no more than 10 gallons per hour (3	8 L/h) in the full operational mode.		
Commercial Pre-rinse Spray Valves (manufactured on or after January 1, 2006)	<ul> <li>Function at equal to or less than 1.6 gallons per minute (0.10 L/s) at 60 psi (414 kPa) and</li> <li>Be capable of cleaning 60 plates in an average time of not more than 30 seconds per plate.</li> <li>Be equipped with an integral automatic shutoff.</li> <li>Operate at static pressure of at least 30 psi (207 kPa) when designed for a flow rate of 1.3 gallons per minute (0.08 L/s) or less.</li> </ul>			

Source: Adapted from the California Green Building Standards Code (CALGreen) Tier 1 non-residential voluntary measures shown in Section A5.303.3. See the California Plumbing Code for definitions of each appliance/fixture type.

## Acronyms: L = liter

L/h = liters per hour
L/s = liters per second
psi = pounds per square inch (unit of pressure)
kPa = kilopascal (unit of pressure)

Table 4 Size-based Trigger Levels for Electric Vehicle Charging Requirements for Non-Residential Buildings related to Question 10: Electric Vehicle Charging supporting Strategy 3: Bicycling, Walking, Transit & Land Use of the Climate Action Plan				
Land Use Type	Size-based Trigger Level			
Hospital	500 or more beds OR Expansion of a 500+ bed hospital by 20%			
College	3,000 or more students OR Expansion of a 3,000+ student college by 20%			
Hotels/Motels	500 or more rooms			
Industrial, Manufacturing or Processing Plants or Industrial Parks	1,000 or more employees OR 40 acres or more of land area OR 650,000 square feet or more of gross floor area			
Office buildings or Office Parks	1,000 or more employees OR 250,000 square feet or more of gross floor area			
Shopping centers or Trade Centers	1,000 or more employees OR 500,000 square feet or more of gross floor area			
Sports, Entertainment or Recreation Facilities	Accommodate at least 4,000 persons per performance OR Contain 1,500 or more fixed seats			
Transit Projects (including, but not limited to, transit stations and park and ride lo	ts). All			
Source: Adapted from the Governor's Office of Planning and Research's (OPR's) Model Building Code for Plug-In Electric Vehicle Charging				

## Alexan Fashion Valley (Project No. 474586)

# ATTACHMENT A PROJECT DESCRIPTION

The Alexan Fashion Valley project is located on 4.92 acres at 123 Camino de la Reina in the Mission Valley community of San Diego. The project site is currently developed with commercial office structures (69,651 square feet) and on-site surface parking. The project involves the demolition of existing structures and on-site surface parking and the construction of a mixed-use development consisting of residential, commercial office, and restaurant uses. The project would provide a total of 284 residential units (including 48 units with a home-work focus), 8,150 square feet of commercial (office use) and 3,145 square feet of restaurant use. In order to support the residential-work units, the project would provide a total of 3,856 square feet of business center space in three separate business center areas.

Amenities associated with the project include a 2,430 square feet of fitness center, as well as six different amenity areas located throughout the project site for use by residents, employees, and visitors. Two of the amenity areas would be private and would serve the residents of the project, while two amenity areas are intended to serve both project residents and employees, as well as patrons of the project's restaurant. Two additional amenity areas are located along the public right-of-way and provide for pedestrian focus at the project edge to facilitate active social interaction and highlight the project's direct connection to Camino de la Reina and convenient access Fashion Valley Mall and Fashion Valley Transit Center.

The project has been designed with a primary focus on the pedestrian and pedestrian access. Pedestrian movement would be accommodated throughout the project site, allowing pedestrians to easily move between the commercial and residential elements of the project via accentuated enhanced paving and signage. Pedestrian access would be provided along sidewalks on the north and west project site perimeters. Internal pedestrian access provides connections to buildings and the external sidewalks. A bike path would also be provided along Camino de la Reina.

## Alexan Fashion Valley Project (Project No. 474586)

## CAP CONSISTENCY CHECKLIST SUPPORTING DOCUMENTATION

## **Land Use Consistency**

1. The project is consistent with the land use designations in the City's General Plan and the Mission Valley Community Plan. The project is consistent with the underlying zone.

The Alexan Fashion Valley project is located in the Mission Valley Community Plan (Community Plan) area and is governed by the Mission Valley Planned District Ordinance (PDO). The Community Plan identifies the project site as Commercial Office use. The PDO identifies the zone for the project site as MV-CO (Commercial Office).

The project is proposing a Multiple Use Development in accordance with the Community Plan, which allows multiple use development in commercial zones. According to the Community Plan, the objective for the Multiple Use Development option is to provide for new development and redevelopment which integrates various land uses into coordinated multi-use projects.

The project proposes a pedestrian-focused, mixed-use development that consists of three significant revenue-producing uses: residential, retail, and commercial. The project provides for a functional and physical integration of land uses that are tied together by a well-developed pedestrian plan that links the mix of land uses within the project to the project's various open space features, including its residential courtyards, recreational clubhouse/pool/spa, and a pedestrian plaza. The project's pedestrian plan also provides direct connection to adjacent sidewalks that allow convenient access to Fashion Valley Mall, the Fashion Valley Transit Center, and LRT, as well as other nearby amenities and transit stations.

The project provides for land uses that are not only horizontally mixed but also vertically mixed. Commercial and retail space is provided along Camino de la Reina, a heavily travelled local roadway within Mission Valley. The strategic location of this commercial element allows for high visibility and access to the surrounding neighborhood and is connected internally for ease of access to the project's residents. The project also includes vertical integration of residential-work units designed to accommodate individuals who operate businesses from a home office, coupled with shared open-office amenity areas to support a working environment.

In accordance with the Community Plan, the project's multi-use option minimizes the need for an over-reliance on automobile travel and emphasizes pedestrian orientation and proximity to public transit. Furthermore, when considered in concert with redevelopment of the Union Tribune site located across from Alexan Fashion Valley, redevelopment of the Town and Country Hotel located just west of the project site, and the current Millennium mixed use development under construction east of the project site, the Alexan Fashion Valley project contributes to a "village" in this portion of Mission Valley. Adding to these developing village components, the project locates a large pedestrian plaza along Camino de la Reina, functioning as an important entrance and focal point for the project and providing an activated gathering space.

The proposed project implements the Community Plan and PDO. The project provides for a contemporary, mixed-use development that fulfills smart growth principles. The proposed redevelopment of the project site at this location not only provides the perfect scale of development and mix of uses, but sets a high standard for future redevelopment that supports opportunities for villages within the Community Plan and creates a lively main street scene along Camino de la Reina, activated by shops, restaurants, and integrated residential uses.

## **CAP Strategies Consistency**

## STRATEGY 1: ENERGY & WATER EFFICIENT BUILDINGS

- 1. <u>Cool/Green Roofs</u> The project will include roofing materials with a minimum 3-year aged solar reflection and thermal emittance or solar reflection index equal to or greater than the values specified in the voluntary measures under the California Green Building Standards Code.
- 2. **Plumbing fixtures and fittings** The project will use low-flow fixtures and appliances that are consistent with the following:

## Residential buildings:

- Kitchen faucets will not exceed maximum flow rate of 1.5 gallons per minute at 60 psi;
- Standard dishwashers will not exceed maximum flow rate of 4.25 gallons per cycle;
- Compact dishwashers will not exceed 3.5 gallons per cycle; and
- Clothes washers will not exceed a water factor of 6 gallons per cubic feet drum capacity.

## Nonresidential buildings:

- Plumbing fixtures and fittings will not exceed the maximum flow rate specified in Table A5.303.2.3.1 (voluntary measures) of the California Green Building Standards Code.
- Appliances and fixtures will meet the provisions of Section A5.303.3 (voluntary measures) of the California Green Building Standards.

## STRATEGY 2: CLEAN & RENEWABLE ENERGY

3. <u>Clean & Renewable Energy</u> – The project is designed to have an energy budget that shows a 10% improvement when compared to Title 24 (2013), Part 6 Energy Budget for Proposed Design Building as calculated by Compliance Software certified by the California Energy Commission, for both indoor lighting and mechanical systems.

## STRATEGY 3: BICYCLE, WALKING, TRANSIT & LAND USE

- 4. <u>Electric Vehicle Charging</u> A total of 14 parking spaces (3% of the total parking spaces required for the project) will be provided with a listed cabinet, box, or enclosure connected to a conduit linking the parking spaces with electrical service in a manner approved by the building and safety official. Of those 14 parking spaces, 7 parking spaces (50%) will have the necessary electric vehicle supply equipment installed to provide active electric vehicle charging stations ready for use.
- 5. <u>Bicycle Parking Spaces</u> The project will provide 140 bicycle parking spaces (including 122 for residential units, plus 8 short-term and 10 long-term parking spaces for commercial uses), which exceeds the City's Municipal Code (Chapter 14, Article 2, Division 5) of 129 bicycle parking spaces.

- 6. **Shower Facilities** The project will provide 1 shower stall and 2 personal effects lockers for office uses in accordance with the voluntary measures under the California Green Building Standards Code.
- 7. **Designated Parking Spaces** The project will provide 469 parking spaces. Of those spaces, the project will provide 47 designated spaces (at least 10% of total parking provided, not including electric vehicle charging stations/parking) as parking designated for a combination of low-emitting, fuel-efficient, and carpool/vanpool vehicles.
- 8. <u>Transportation Demand Management Program</u> The project may accommodate over 50 tenant-occupants (employees). Therefore, the project will implement a Transportation Demand Management Program. In accordance with the CAP Strategies, the project's Transportation Demand Management Program will provide the following:
  - Leases with commercial tenants shall include a requirement to cash-out employees for not using parking.
  - Parking spaces for residents shall be leased separate from the rental of apartment homes.
  - An employer network in the SANDAG iCommute program shall be established and maintained, promoting SANDAG's RideMatcher service to tenants/employees
  - On-site home-work units that support and encourage telework options.
  - Access to services that reduce the need to drive, such as cafes, commercial stores, banks, post offices, restaurants, and gyms located within 1,320 feet (1/4 mile) of the project.